A Database Publication

THE MICRO USER

Volume 8 Number 10 December 1990 £1.50

PIPE LOONACY
Plumb the depths of adventure strategy

KINETIC ART
Make your micro trip the light fantastic

ADVENTURE
Excape from Exile with your life intact

GRAPHICS
Produce a great bouncing ball demo

REVIEWS
Modern Languages and Computers
World Map Study
Getting Ready for Maths
Place Value Activities
RiscType
...plus all the latest games

BOOST YOUR CHRISTMAS LIST
Public Domain Software for all

For ALL users of the BBC Micro, Master, Electron, Archimedes series and A3000

SILICON VISION

DESKTOP SOLUTIONS FOR THE ARCHIMEDES & BBC A3000

SolidTOOLS

The fully integrated environment for 3D CAD, Animation, Rendering & Hardcopy. The package includes SolidCAD, FILM-Maker, SolidsRENDER, Realtime Graphics Language, SuperDump & SuperPlot for a turnkey solution satisfying all your 3D Design and Presentation requirements.

(RISC OS) New

SolidCAD

The next generation multi-tasking CAD package combining 2D Draughting and 3D Modelling techniques with advanced smooth shading and lighting effects to provide the ultimate 3D Draughting System for Architectural design, Interior design, Engineering design and Teaching CDT. Allows drawing in plan, front & side elevations and also directly in 3D to visualise a model while it is being created. Powerful zoom, pan, sweep, extrude and macro facilities are also provided to enhance design productivity.

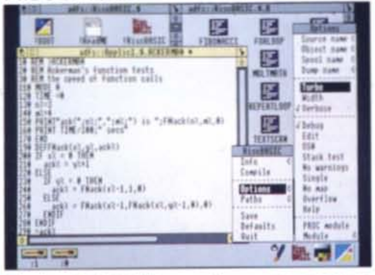
(RISC OS) New

SolidsRENDER

The most advanced Ray Tracing package for the Archimedes producing photo-realistic images of SolidCAD designs or FILM-Maker animations taking into account multiple light sources, reflections, shadows, transparencies, refractions and textures for the highest quality pictures from the leading 3D graphics experts renowned for technical excellence. The high-speed ray tracer uses sophisticated colour mixing techniques to provide the maximum range of colour shades plus anti-aliasing for smooth edges, motion blur effects, dynamic viewpoint, variable camera lens for wide angle and telephoto effects and multi-colour light sources driving the Archimedes display hardware to its limits for the best photo-realistic images within the laws of optical physics.

(RISC OS) New

RiscBASIC



The best BASIC V compiler money can buy. Here's what the reviewers say:

"If you are looking for THE compiler to go for, and are confused about which one deserves to win the very public battle that has been raging in the advertisements, well my preference is for RiscBASIC"
- RISC USER August 1989.

"In summary, BASIC V is the best version of BASIC produced and RiscBASIC provides the most compatible, fastest compiler for this language. This will be an invaluable addition to every serious BASIC programmer's toolkit. My congratulations to Silicon Vision" - Archive June 1989.

"very useful indeed for development work...produced significantly more efficient code" - Micro User July 1989.

"RiscBASIC wins the race...has the edge overall...more likely to provide the correct results" - BBC Acorn User Nov 1989.

"Still the only true BASIC V syntax compiler. If you want the best, buy Silicon Vision's complete answer"
- Micronet August 1989.

(RISC OS) New

GerberPlot

The complete Gerber driver for ARC-PCB and ARC-PCB Professional Printed Circuit Board design packages producing Gerber plotfiles for driving Electro-static Photo-plotters. These plotfiles may be sent directly to photoplotter bureaus on Archimedes ADFS or MSDOS disc formats to produce the highest quality PCB artwork for professional results.

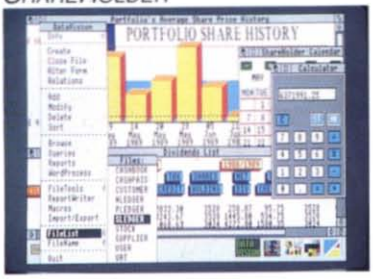
(RISC OS) New

SuperPlot

The complete plotter driver for SolidCAD, Realtime Solids Modeller and Gate-Array Design System supporting the industry standard HP-GL, Graphtec, Watanabe and Plotmate plotters.

(RISC OS) New

ShareHolder



The complete share holder's management system providing all the facilities needed to automate your portfolio. Features include Company statistics, Share holdings, Transaction processing, Portfolio history, Forecasts, Dividends due, Share price updates plus built-in Calendar, Calculator and Hardcopy facilities for total integration.

(RISC OS) New

DataVision

A full featured true relational database management system which also includes word processing, label printing, reporting, & mail-merging facilities in one integrated environment for the Archimedes, bringing professional quality business software to the demanding user. The database manager is rich in features and includes facilities for the production of complex queries, detailed reports, browsing, sophisticated relational data entry, relational reporting, interactive & global editing, formula entry and validation. All this in an intuitive easy to use mouse driven environment.

(RISC OS) New

Financial Accountant

The professional business accounting and database package which includes DataVision together with turnkey applications for Order Processing, Invoicing, Sales ledger, Purchase ledger, Nominal ledger, Cash book, Stock management, Reporting and VAT analysis complete in one integrated environment.

(RISC OS) New

OfficeTools

The complete Office Automation system for Database management, Mail merging, Wordprocessing, Label printing, Order Processing, Invoicing, Accounting, Share portfolio, Forecasting, Dividends processing, Calendar, Calculator and Presentation graphics. Includes Financial Accountant, DataVision, ShareHolder, and the Presentation System providing a turnkey solution for all your business and management requirements.

(RISC OS) New

All software run in native mode on A300-400 Series & A3000 with RISC OS. Enquire for our free product Catalogue

SILICON VISION LTD, SIGNAL HOUSE, LYON ROAD, HARROW
MIDDLESEX HA1 2AG, UK. TEL: 081-861 2173
FAX: 081-427 5169. TELEX: 918266 SIGNAL G.

All product titles are trademarks of Silicon Vision Ltd. All other trademarks acknowledged.
Copyright © 1990 Silicon Vision Limited. All rights reserved.

Watford Electronics presents .....

Winter Hands-On Open Days

Sponsored by : The Micro User and BBC Acorn User

EDUCATION

Of particular interest to Educational user will be a separate area reserved for discussing the needs and requirements of Schools, Colleges, LEAs' and Teachers alike. If your Educational Establishment is interested, come and talk to us about our SPECIAL Prices, Service and Support.

To Be held at:
JESSA HOUSE

on SUNDAYS
4th November 1990
&
2nd December 1990

10.00am to 4.00pm

SALES ADVICE

Watford Electronics Technical and Sales personnel will be on hand to discuss all your technical queries and computer requirements. Come and see live demos of popular BBC / Archimedes Software, Hardware & Watford Electronics own range of PC Compatibles.

Yet another chance to bring out the family and make a visit to Watford Electronics to watch, to learn, and talk to other like minded enthusiasts, experts and novices on the subject of Acorn BBC and Archimedes range of home computer systems. This time we have two dates, four weeks apart in case you can't make it to one of the events.

Hardware and Software - Amongst various products, we shall be demonstrating our NEW ...

A3000 "Ultimum" podule expansion system
Archi COLOUR Hand Scanner
Archi 8 Meg RAM Expansion
Archimedes Hi-Res A4 Scanner
Archi Real Time COLOUR Digitiser
ARM 3 - 30MHz Processor

Also appearing will be **NEW** products from:

Acorn Computers
Clares Micro
Colton Software
Computer Concepts
Minerva
Panasonic UK
Silicon Vision
Taxan UK
4th Dimension

Technical Support

- **Watford Electronics:** Our technical team will be available to discuss any technical queries and offer advice.
- **BBC Acorn User:** Contributors and editorial team will be at hand to answer all your questions.
- **The Micro User:** Mike Cook will be available to help and advise on BBC/Master related matters.
- **Gordon Taylor:** The renown Archi 'Guru' and technical writer will be available to advise on Archimedes related matters.
- **Acorn Computer's** representitives will talk about proposed new products and answer all yours questions.

Educationalist support

- A private area allocated to the specialist in education will be provided.
- Staff will be on hand to talk about current trends and requirements in the educational sector.
- Watford Electronics Managing Director, Nazir Jessa will be happy to discuss special deals and packages for individuals & educational establishments.

Instant Finance available up to £1000

Purchases can be made at the Open Day and Instant Credit deals will be available via Lombard Tricity Finance Ltd (subject to status). Extended finance over 36 months on any purchase over £300 + VAT (APR 36.8%). Identification will be required, ie Driving Licence, Credit Card and Bank Card. A deposit of 10% of your purchase is all you need to pay on the day.

***** FREE REFRESHMENTS WILL BE SERVED *****

ON PRESENTATION OF THIS VOUCHER ON THE OPEN DAY, **£10 OFF** ***WE SHALL ALLOW £10 OFF ANY PURCHASE OVER £200 (ONE PER PERSON)***

THE MICRO USER

Managing Editor	**Derek Meakin**
Features Editor	**Steve Turnbull**
Art Editor	**Mike Bailey**
Consultant Editor	**Peter Davidson**
Production Editor	**Peter Glover**
Technical Editor	**Mike Cook**
Reviews Coordinator	**Pam Turnbull**
Group Advertisement Manager	**John Snowden**
Advertising Sales	**Peter Babbage** **Yvonne Benson**

Tel: 0625 878888 (All depts.)
051-357 2961 (Subs.)
MicroLink: MAG001
Telex: 94081191
Prestel Mailbox: 614568383
Fax: 0625 879966

Published by:
Database Publications Ltd,
Europa House, Adlington Park,
Macclesfield SK10 4NP.

ABC 30,212
July-December 1989
ISSN 0265-4040

The Micro User welcomes new program listings and articles for publication. Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette tape or disc. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an all-rights basis.

© 1990 Database Publications Ltd. No material may be reproduced in whole or in part without written permission. While every care is taken, the publishers cannot be held legally responsible for any errors in articles, listings or advertisements.

The Micro User is an independent publication and neither the BBC nor Acorn Computers Ltd are responsible for any of the articles in this issue or for any of the opinions expressed.

News trade distribution:
Comag Magazine Marketing
Tavistock Road, West Drayton
Middlesex UB7 7QE.
Tel: 0895 444 055.

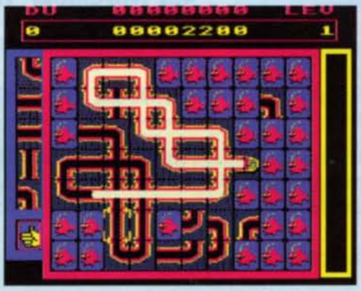
Database Publications is a division of Europress Ltd

LEISURE SPECIAL

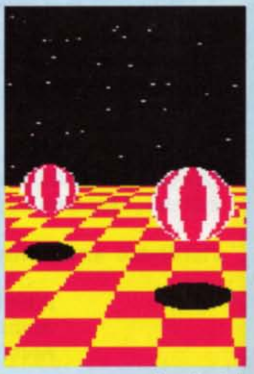
EXILE
SUPERIOR ACORNSOFT

59 **Exile upgrade** Arguably the most complex arcade adventure ever – we make it easier. *

89 **Bouncing balls** The BBC Micro can produce stunning graphics – here's a demonstration. *



Pipe Loonacy



Bouncing ball

117 **Pipe Loonacy** Another amazing multi-level arcade game from the Master of Mode 5 graphics, Mike Goldberg. *

Type-it-in

This symbol indicates that the feature contains at least one full length listing for you to key in on your micro. *

All the major listings in this magazine are accompanied by checksums to help you key them in correctly. For full details of how to use them see the article on page 72 of the February issue.

Get it right ✓

MICRO USER CLASSIFIEDS

The best bargains in the world of all Acorn micros come from fellow readers of The Micro User. Turn to Page 130 to find just what you're looking for – from cheap modems to complete computer systems.

Newcomers

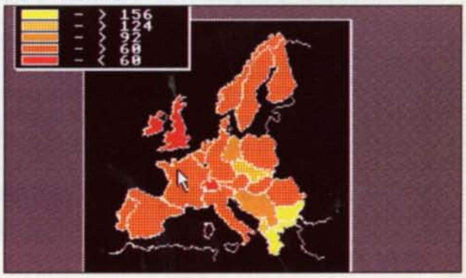
32 **Risc Type** Bad typing habits can be overcome eventually and anything to make that easier must be good.

Education

21 **Update** Up-to-the-minute news of the Acorn range of micros in use in the world of education.

24 **Education Reviews** We look at the latest software for the BBC Micro series in schools including:
- Modern Languages
- ESM classics

World Map Study



REGULARS: News 7 • Problem Solved 53 • Mad Hatter 56

Specials

35 **Basic Saver**
Don't take the chance of losing your precious programs – use this automatic protection instead. *

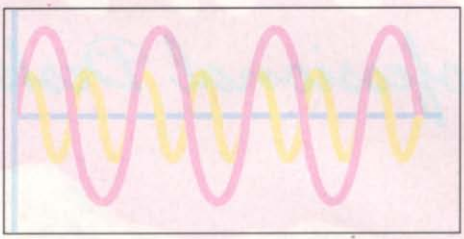
64 **Routine Matters**
Another batch of fascinating utilities that you can include in your own programs. *

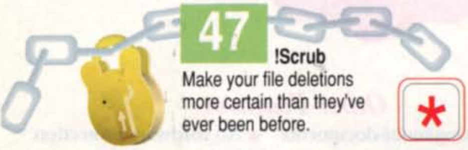
72 **Making Waves**
In the place where electronics and music meet discover interesting waves. *

44 **Wordwise Database**
How to use a wordprocessor to build and maintain a complex database with ease.

47 **!Scrub**
Make your file deletions more certain than they've ever been before. *

78 **Supercharged Electron**
It is possible to speed up your Electron using just software – we reveal all. *





94 **Our reviewers delve deep into the depths of the latest games releases.**

SOFTWARE SCENE
DEMO MODE: Hit ESCAPE to finish.
00001387
BAT:
SPEED:
BALL:
LAST:
LARGE LEVEL 1
DICE
STAYS ON THE SCREEN
DS UNLESS YOU PRESS A KEY
STAR PORT
SCHWARZENEGGER
PREDATOR
Steve to play
3rd shot from
Fairway
Sand W
Hole 1
Par 4
Wind

Brixx!

Pon!

Memory Magic

Micro Golf

Play it again Sam 14

Body Building 67 • PD Page 76 • Hac Man 84 • Letters 133

FREE Software

Subscribers to *The Micro User* will receive the following software on disc or tape wth this month's magazine:

- Pipe Loonacy
- Exile Upgrade
- Wave Maker
- Routine Matters

In addition, those readers with a BBC A3000 or Archimedes series machine will also get:

- !SparkPlug
- !FileUtils
- !BIATetris
- And much more...

THE MICRO USER
THE MICRO USER

For new subscribers there's a special gift: A free binder to keep your copies of The Micro User.

Find out how to subscribe on Page 125.

Key to which micro articles are suitable for

e	Electron
B	BBC B
+	BBC B+
M	Master 128
Compact	Master Compact
A	Archimedes series and BBC A3000

NEXT MONTH

THE MICRO USER

Out of the Cold

As the winter nights close in explore your imagination with the lighter side of computing. Not forgetting all our regular features plus our unique BBC Micro and A3000 money saving PD section.

Available from **BEEBUG** *for the Archimedes and A3000*

ovation

Professional Desktop Publisher

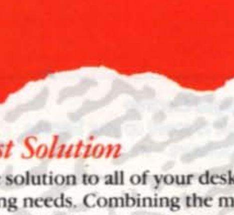
The Best Solution

Ovation provides a single solution to all of your desktop publishing and word processing needs. Combining the most useful and powerful features from DTP systems costing much more, you will find Ovation has just about everything you could want. Ask your dealer for a demonstration – you won't be disappointed.

Text Editing

Text may be typed in straight away just like a word processor, without the need for any complicated frames or styles. When a page is full, text will simply flow onto the next page. In addition you may add any number of frames to the page, each with its own 'story'. Frames may be linked together causing the 'story' to flow from frame to frame.

Adding Style



A 'style' is the font, size, justification, leading, indent etc. of a piece of text. Ovation allows any number of styles to be defined, named and then applied to paragraphs at the press of a key. Styles may be re-defined at any time, and the changes will automatically flow through the entire document. In addition, local styles may be applied to any highlighted block by simply selecting the font, size, style and format from the menus.

Frame Handling

Ovation has many advanced frame features, such as linked text frames with auto-flow, repel text, definable frame borders and a step-and-repeat facility. Unique on the Archimedes, is our parent/child system for frames and lines. This system allows you to copy and paste frames with embedded child frames and lines, as single items. This allows diagrams, forms, tables etc. to be copied or moved with ease.

The Instinctive DTP

Ovation is supplied with a tutorial and complete user guide, although you probably won't need to refer to it very often. Ovation makes full use of the RISC OS multi-tasking environment to provide a formidable array of features that are easy to learn and instinctive to use. A quick reference card is also included, which lists all the keyboard and mouse short cuts.

Other Features

- Multi-tasking/multi-documents
- No hardware protection
- Full WYSIWYG display with variable view
- Fast built-in spelling checker (requires 2Mb)
- Printer drivers for Epson, PostScript, LaserJet, and Integrex printers
- Import Draw and Sprite files. Features include scale, crop, fit-to-frame
- Master pages for each chapter
- Cut/copy/paste using clipboard
- Multiple columns
- Find and replace
- Automatic headers and footers
- Supplied with 4 outline fonts (13 faces)
- Variable (& fractional) font sizes 1pt to 500pt
- Supports coloured text, frames and borders
- Stylesheets and customised start-up
- Definable frame borders
- Linkable text frames
- Supplied with full range of clipart
- Variable size, style and colour lines
- Manual and auto hyphenation (requires 2Mb)

And much, much more......

Excellent Value

At only £99 plus VAT Ovation represents better value for money than any other DTP on the Archimedes/A3000. But don't be mislead by price. We are confident you will be impressed, and offer a full refund if not completely satisfied. Educational discounts and site licences are available.

Only *£99.00*

(+£3 carriage) ***plus VAT***

Available directly from Beebug or from your local dealer.
Please phone for a full specification.

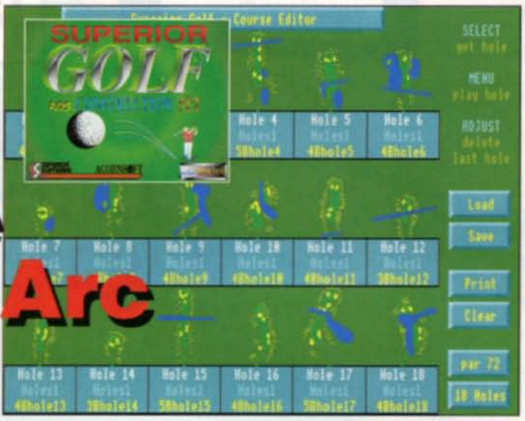
Beebug Ltd.,
117 Hatfield Rd, St. Albans,
Herts, AL1 4JS
Tel: (0727) 40303 Fax: (0727) 60263

BEEBUG

If you wish to order directly, cheques, credit cards and official orders are all welcome.

News BEAT

Hole in one on an Arc



SUPERIOR Software (0652 58585) found a bonus factor to their Superior Golf Construction Set when Ian Robinson social secretary at Morecombe Golf Club wrote to them.

A keen golfer as well as avid Archimedes 310 owner, he recreated the Morecombe course on his micro and found that his handicap stayed the same, with the course playing the same way as the real thing. Intrigued, he took this one step further. Like any golf club, Morecombe's courses have to be changed from time to time, but this is an expensive and risky business, no one knowing how the course will play until it is completed.

By using Superior's construction set he was able to edit the course, playing the new design and working out the yardage and so on. He found some problems with the out of bounds hazard, but even the background scenes were incredibly apt for the Morecombe course.

With redesign and expansion on the cards for the Morecombe club, they could be the first golf club to use an innovative and cost effective way of developing their course.

Interest rates hit Acorn

ACORN'S net profit on normal trading for the first six months of this year was 50 per cent down on the comparable period in 1989 even though sales revenue remained the same. High interest rates were blamed.

Ordinary activities for the six months to June 30 produced a net profit of £42,000 (£80,000 in 1989) but this was knocked down to a net loss of £242,000 by the failure of Torus Group.

Acorn held a 25.3 per cent share of Torus and has had to write off its £242,000 investment.

Announcing the disappointing results, Acorn played up the fact that sales had not dropped dramatically. The first half of 1990 brought sales revenue of £22,074,000, just slightly lower than the £22,102,000 achieved for the same period last year.

Hefty interest charges lopped £319,000 off the operating profit of £361,000.

The latest figures show a dramatic fall compared with the first half of 1989 when the net profit was £2,049,000. This was helped by extraordinary income of £1.2 million from Olivetti and Networks OSN for sales and marketing rights.

For the first time, A3000 and Archimedes computers became the group's biggest selling products during this period. Almost 100,000 units have been sold since 1987.

Continuing research and development has produced new Acorn products this year and Acorn has also invested in its own trading operations in Australia and New Zealand.

"In a difficult economic climate, the board believes that tightly controlled overheads, the policy of delivering high quality products and the maintenance of investment in product development, sales channels and staff enable Acorn to face the future with confidence", said the company's head, Sam Wauchope.

Tiny talk

A PROGRESS report on Smalltalk 80 from Smalltalk Express (081-200 0220) came our way this month. Not only can education users obtain a 50 per cent discount on the £540 price, but a slightly curtailed version is available now which will work on an Archimedes with 2Mb and a hard drive.

In addition they also had news on the Active Book. Brainchild of Acorn founder Herman Hauser, the Active Book is a portable computer which will read your handwriting. It should be available early in 1991.

Using Acorn's Risc set, Smalltalk is the power behind the handwriting recognition software.

Still on the Smalltalk front comes news of an exciting development from ParcPlace Systems, US authors of Smalltalk 80.

They are working on a unified Smalltalk system which will work under any windowing environment, whether the Archimedes Risc OS, the Apple Macintosh, Windows 3 on the PC or XWindows on a Unix machine.

In theory you'd be able to write a program on any machine sure that it would work equally well under a different system – as long as it was written in Smalltalk.

There is a long way to go yet, and whether this will mean in reality simplified porting or just taking a disc from one machine to another remains to be seen.

CHRISTMAS OFFERS!

FREE

BEEBUG
RISC USER
Magazine Disc
December 1990 Vol.4 No.2
Double-click on the RISC User icon for details of this months programs
Copyright © Beebug Ltd
117 Hatfield Road,
St Albans,Herts AL1 4JS

RISC User Magazine Disc

containing all the programs from RISC User December 1990, PLUS as usual, a selection of exciting BONUS items

when you subscribe to

RISC User

The most popular magazine devoted solely to the Archimedes range of computers and the A3000.

RISC User offers 10 magazines a year, which typically contain:

News on the world of Archimedes
Reviews of the latest products
Ready to run applications
Utilities, routines and advanced programming techniques
Programs and articles on sound and graphics
Series of articles for all spheres of interest:
  'Into the Arc' — tutorial series for beginners
  'Mastering the Wimp' — series on Wimp programming
  'Under the Lid' — hardware series
  'Assembler Workshop' — all about ARM Assembler
  'Beginning' 'C' — series on C language
  'DTP/WP' — tips on using commercially available packages
  'Arcade' — a round-up of the latest games for the Arc
Hints and tips
Postbag for your letters and answers to your questions
Technical queries and expert answers

The programs published in each magazine, plus additional bonus items are also available on disc.

FREE

Vol.9 No.6 November 1990
BEEBUG
FOR THE BBC MICRO & MASTER SERIES
Mandelbrot Set
WORDPROCESSOR STYLE INPUT
THE ARCHIMEDES AS
BETTER PROGRAMMING
CURLY EDUCATIONAL GAME
BEEBUG
Spinning Text
PINPOINTING A DATE
INITIALISING ROM IMAGES
INTERWORD AND INTERSHEET

The Latest 2 Magazines

when you subscribe to

BEEBUG Magazine

*The **only** significant magazine still dedicated entirely to users of the BBC Model B and Master series.*

BEEBUG offers 10 magazines a year, all packed with:

A variety of programs to type in, or run from disc:
  Stand-alone applications
  Handy utilities and useful routines
  Entertaining games
News from the BBC world
Reviews of new products, and comparative surveys
Series for all spheres of interest:
  'First Course' series for beginners
  'Workshop' for the more advanced programmer
  '512 Forum' for users of the Master 512
  'Practical Assembler' for Assembly language programmers
  'BEEBUG Education'
Informative articles:
  Upgrading to an Archimedes
  Writing a Compiler
  Using the ROM Filing System
  Thanks for the Memory Bas 128
  Music Programming in Ample
Hints and tips
Postbag for your letters and answers to your questions and lots more

All magazine programs, plus some bonus items are also available on disc.

I would like to subscribe to RISC User Magazine starting with December issue, and recieve in addition *December Magazine Disc* Free ☐

I would like to subscribe to BEEBUG Magazine, and receive in addition the latest *2 issues Free* ☐

I would like a joint BEEBUG and RISC User subscription, and receive the latest *2 offers Free* ☐

RISC User/BEEBUG Subscription Rates (1 year): **£19.90** UK, BFPO, Ch.I, £29 Europe+Eire, £35 Middle East, £38 Americas+Africa, £41 Elsewhere
Joint Subscription RISC User and BEEBUG (1 year): **£29** UK, BFPO, Ch.I, £43 Europe+Eire, £52 Middle East, £57 America+Africa, £61 Elsewhere

I enclose a cheque for £ ____________ (all cheques must be in pounds sterling, drawn on a UK Bank) or,

Please debit my Access/Visa account No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Card Expiry Date ________ Signature ____________

Name ____________________

Address ____________________ Post Code ________

MD ____________________

With your subscription you will receive not only 10 magazines a year, but you will benefit from a professional organisation with 9 years of experience in software, hardware, computing publications and support.

- Showroom with friendly professional staff, where you can try out the latest software and hardware
- BEEBUG's own quality software and hardware, with special discounts for magazine subscribers
- A large range of other products, and a Retail catalogue mailed free to magazine subscibers
- Speedy mail-order service
- Workshop repairs by qualified staff
- Trade-in service to upgrade your equipment

BEEBUG LIMITED

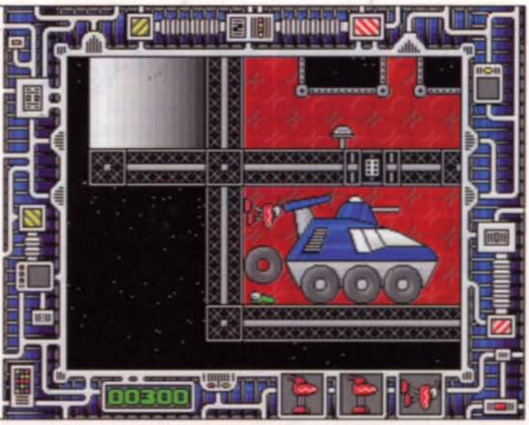
117 Hatfield Road, St. Albans, Herts AL1 4JS
Telephone: 0727 40303 Fax: 0727 860263

Pest control

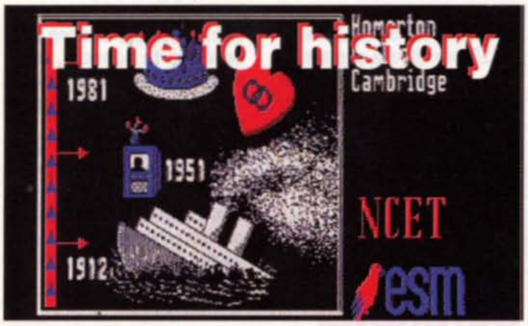
BEWARE all alien invaders, Minerva (0392 437756) have a cute secret weapon and they're not afraid to use.

BugHunter was so successful in cleansing the house and the Earth that when we are invaded by an alien life force there is no hesitation in sending him to thwart their evil plans.

BugHunter in Space will be available for Christmas, priced at £17.95. Good shooting.



Time for history



A UNIQUE history database has been developed by ESM (0223 65445). Time Traveller is usable by all ages and approaches the concept of time and chronology in an innovative way.

Traditionally this is a very difficult concept to put across, and ESM's approach was praised at the Historical Association's annual conference.

Available for the BBC Micro, Time Traveller allows pupils to record and interpret historical data which can then be printed as a visual timeline of specific events.

By studying and interpreting their chosen timelines, students will be able to gain a better understanding of chronology and such terms as years ago and consequence.

Children are encouraged to add the dates and events themselves into a simple time framework from 9999BC to AD2100. Entered in chronological order the information is then displayed in years, decades or centuries.

The National Curriculum requires that "pupils should ... employ appropriate chronological conventions by using timelines". Time Traveller aims to help in the understanding of the sequencing of events, making comparisons and examining cause and effect.

Also ideal in cross-curricular activities as it encourages pupils to build up a library of data on a whole variety of subjects.

Initially Time Traveller comes with a sample data disc, 100 Years of History 1891-1990, and the usual guides as well as guidance on use with the National Curriculum.

Schools video cost cut

INTERACTIVE video has been slow reaching schools because it cost too much, says Dr Colin Wormand of Eltec Computers. Now, in conjunction with the British Nuclear Forum, they have announced a claimed lowest price ever for a complete computer-driven interactive schools video system.

Costing £1,899 for orders placed before December 31, the system consists of a 2Mb BBC A3000, Philips Laservision 406 disc player, Allied Interactive genlock and a set of three double-sided science and maths discs.

The discs, aimed at the secondary school, were designed by the Interactive Learning Project at Newcastle University.

Covering the National Curriculum to GSCE level, they have been tested over the past year in 70 schools.

BNF stress that they have exercised no editorial control over the content of the discs, which cover energy, radiation, statistics and probability.

DTO update

HAVING reviewed Desktop Office from Minerva (0392 437756) last month it seems that some useful suggestions made by users have caused Minerva to update the software free of charge to all registered users.

Changes include visible page breaks in DTOWord, and the print sub-menu now offers the facility to to select, print or preview a selected block. Previewing is much more friendly as it stops at the end of each screen.

There are extensive additions to the spreadsheet, including a size increase, and there is a labels option in DTOChart as well as improvements to the DTOBase program. All in all if you haven't registered now may be the time to do so.

Authoring Arc

AS *The Micro User* went to press, Westland System Assessment (0935 24545) was poised for the major launch of a new authoring system based around the Archimedes.

Called Avanti, it is designed to produce training programs using text, video, audio and CD rom. An offshoot of Westland Helicopters, the company produces computer-based training packages.

It specialists in programs for aviation and military use, but the new system will lend itself to much wider markets.

Based on a Windows system, Avanti allows users to move easily between text and graphics and to go down to basic code with equal ease. It has already been tested on a number of flight training applications.

"The ease of use and scope of the system makes it ideal for any kind of training application", said a Westland spokesman.

Festive breaks

ELECTRON, BBC Micro and Archimedes owners can expect the Christmas offering from Superior Software (0652 58585) in the shops by the end of November.

Called Masterbreak, it is a combination of trivia quiz and snooker with more than 1,500 questions covering music, science and nature, geography, history, sport, passtimes and the arts.

Masterbreak throws up multiple choice questions in a snooker format. Players go for a red ball question and if they answer it correctly, they can go on to a colour. The Archimedes version has been written by Superior Golf author John Bell.

"The advantage of Masterbreak over games like Trivial Pursuit is that it can be played by one person", said Superior boss Steve Hanson.

"You can challenge yourself to achieve a break of 147 and because of the structure of the game, you can't cheat. It can also be played by up to four people and should be a popular package for Christmas".

Electron and BBC Micro cassettes cost £9.95, discs £11.95, Master Compact £14.95 and Archimedes £19.95.

Fonts range extended

AS DTPing on the Archimedes gains in popularity outside the UK, The Electronic Font Foundry (0344 872923) have extended their range of typefaces.

Greek, Hebrew, Arabic and Cyrillic faces are under development, but for all Esperanto speakers out there the Latin 3 alphabet is already available in EFF Times, EvenWriter, Poster and Swiss.

Rounding off the range

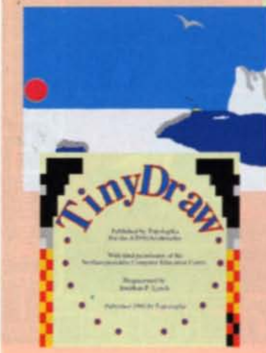
NEW from the disc duplicator are new additions to Circle Software's (0793 770021) Premier range.

Premier Junior has all the features of Premier 3 apart from the command language. For £49 you can own Junior, you can have a professional Archimedes word processor by adding this application to the base program for £74, while a combined word processor/database will cost £99.

In addition, Circle have also released two new applications which will work under both Premier 3 and Premier Junior. Letter Filer helps keep track of all incoming and outgoing letters for £15. For small businesses there is Stock Control.

£20 provides a system to keep track of stock levels as well as automatic re-ordering, producing stock value reports and so on. Look out for a full accounting package in the new year.

Getting smaller



Out now from Topologika is a two in one educational package – Tiny Logo, and Tiny Draw designed as a simple introduction to computer art on the Archimedes. Price, £29.95

Adventures with a wimp

LAUNCHED to celebrate more than 10 years of Acorn home computers, The Wimp Game is one of a number of new offerings from The 4th Dimension (0742 700661).

A pointer driven graphic adventure, it's a multi-tasking game for Archimedes and A3000 machines which even allows users to run other programs as they play.

The aim is to work through various locations using the pointer to try out many objects and a magnifying glass to examine them.

The Wimp Game has no time limit, help, hints or score and no keys on the keyboard are used. Players progress from being the owner of an Acorn Atom to owning an Acorn R200 workstation. Price, £19.95.

Also new from The 4th Dimension is Powerband, the next project from E-Type author Gordon Key. A vector graphic 3D racing simulation, it puts users at the wheel of a Formula 1 car and is claimed to utilise routines almost twice as fast as Apocalypse.

Powerband features full racing circuits with hairpin bends, chicanes, roadside scenery and hazards. Unlike E-Type, it is more a pure simulation than a game and is aimed at the Christmas market. Price, £24.95.

Completing the new offerings are Superpool, a 3D pool simulation for Archimedes and A3000 computers and Break 147, a full 3D snooker game. Superpool includes tournaments, challenges and trickshots.

Players can even create and edit their own tables and have the options of either nine or 15 ball pool.

It includes a facility to record and save whole frames then replay them.

"A lot of people have asked us to include this feature so that they can keep their best performances", said Steve Botterill of The 4th Dimension.

"We've found a technique to do it without sacrificing other game features. It really is terrific being able to prove that you've cleared the table or made an unbelievable shot". Due out soon, Superpool costs £19.95.

Break 147 includes digitised sound effects, clever shots and the ability to view the table from any angle, even when the balls are moving. Price, £24.95.

Hacker defences

STORIES of computer fraud come and go, but this doesn't lessen the reality that £5 billion pounds a year is lost each year because of it. The destruction or corruption of data can cause financial loss and disruption to businesses large and smal.

Data and software protection, and the remedies available for dealing with offenders, is the topic of a new free guide produced by the City of London law firm Titmuss Sainer and Webb (071-583 5353).

Protection Against Hackers has 12 pages covering the practical and legal remedies for business, and explaining for software publishers the concepts of copy protection and a publishers rights.

Mystery tour

INTRIGUING morsel of news from Computereyes about their up and coming game, Square Route. Owner Andy Smith reports that it has 250 password protected levels, is easy to play, yet difficult to master.

Further, its concept is unique: "There is nothing like it", says Andy, promising a review copy very soon. Can't wait.

A540 into action

ALTHOUGH the A540 is just starting production, it is already making its impact. Derbyshire firm Computek (0457 865953) have launched a new graphics division offering design, layout and printing.

Using Computer Concepts' latest version of Impression II and Poster – to name just a couple – the Archimedes A540 and a HiRes Lazer Direct deliver the mono output, colour printing requiring a 8Mb colour PostScript printer.

Aiming to keep costs low, Computeck are offering their services to schools, businesses and anyone who needs full colour leaflets or information sheets.

This drastically cuts down on the costs a tradition printer would charge and does away with minimum runs of 1,500 for colour separation and print work. For instance 10 full colour A4 copies would only cost £18.95.

Colour taped

NEW for the Archimedes range is a PAL colour coder producing a high quality colour video signal which can be recorded on a video tape or fed into a colour monitor with a composite input.

It's especially significant for people who already use a video digitiser to produce audio visual displays, as they can now record their results on to VHS tapes.

Available from Pineapple Software (081-599 1476) for £69, it is quite small – 4.5in x 2.5in x 1in and sits behind the Archimedes plugged into the RGB socket. This provides a buffered RGB output which drives the Archimedes monitor as well as the coded video output.

You can also select 624 or 625 line compatibility for interlaced or non-interlaced screen modes. The sync pulses are completely regenerated by the coder to give the correct CCIR waveform with broad and equalising pulses.

The Archimedes Specialists
Competitive Pricing

BEEBUG

The Archimedes Specialists
Superb Service

Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...

A3000

0255g	A3000 Entry System	599.00
0256g	A3000 Colour System	798.00
0209g	JetSet Pack + TV Modulator	649.95
0220g	Learning Curve Entry	699.00
0221g	Learning Curve Colour	898.00

Archimedes Computers

0260g	410/1 Entry System	1099.00
0261g	410/1 Colour System	1298.00
0262g	420/1 Entry System	1265.00
0264g	420/1 Colour System	1464.00
0197g	420/1 Learning Curve Entry	1299.00
0198g	420/1 Learn. Curve Colour	1498.00
0275g	440/1 Entry System	1699.00
0276g	440/1 Colour System	1898.00
0194g	540/1 Entry System	2995.00
0195g	540/1 Colour System	3194.00

The official Acorn Colour Monitor (AKF12) is supplied with all Acorn Colour Systems as we believe the quality is superior to other, cheaper monitors.

SPECIAL FREE OFFERS:
A free RISCOS extra's disc, plus:

A3000 & Learning Curve (Not JetSet)
Beebug's high quality 1Mb RAM Board

Archimedes 410/1
20 Mb Drive & RAM upgraded to 2Mb

Archimedes Learning Curve (420/1)
Drive changed to 40Mb, RAM expanded to 4Mb

Archimedes 440/1
A Taxan 775 monitor (Entry system) or
a Star XB24-10 printer (Colour System)

Archimedes 540/1
Taxan 795 (or 775 if preferred) monitor (entry) or
a Star XB24-10 Colour Printer (Colour system)

Memory Upgrades

0266f	0.5Mb RAM for A305 (Acorn) *	139.00
0222g	1Mb A310 Upgrade (CJE) *	287.65
0223g	3Mb A310 Upgrade (CJE) *	444.17
0278d	1Mb RAM upgrade for A400 *	60.00
0813g	Atomwide 8Mb RAM *	850.00
0225f	A540 4Mb RAM Card *	469.00

***Dealer fit only - Free fitting by appointment**

Hard Drives (ST506)

0268g	A310 20Mb (Acorn)	379.00
0120g	A400/1 20Mb (Beebug)	173.87
0121g	A400/1 40Mb (Beebug)	284.30
0122g	A400/1 53Mb (Beebug)	399.00

SCSI Hard Drives for A300/400

Supplied complete with controller card.

0140g	20Mb Internal	375.00
0141g	45Mb Internal	495.00
0142g	80Mb Internal	699.00
0145g	20Mb External	535.00
0146g	45Mb External	655.00
0147g	80Mb External	859.00

Archimedes Upgrades

0795d	A310 5.25" disc buffer (B'bug)	28.91
0267e	A310 Floppy drive (2nd) *	114.95
0784d	A410/1 5.25" disc buffer	28.91
0279e	A410/1 Floppy drive (2nd)	119.95
0134f	ARM 3 30Mhz (Beebug) *	399.00
0269d	Backplane 2-way (Acorn)	37.00
0768d	Backplane 4-way inc fan (Ifel)	55.00
0236b	MEMC 1A upgrade *	65.48
0817b	VIDC Enhancer (Atomwide)	29.95
0139b	VIDC Mode Expander (B'bug)*	29.95

Archimedes Add-Ons

0716b	Archimedes Dust Cover	7.43
0832b	Keyboard Extension Lead	6.91

Archimedes Expansion Cards

1950d	16 bit I/O card (Intell.Interf.)	199.00
0803d	A448A Mono sound sampler	135.00
0833d	A448B Stereo Sound Sampler	165.00
0834d	A448M Stereo + MIDI sampler	195.00
0265d	Floating Point Co-pro	559.95
0271d	I/O Podule (Acorn)	79.95
0272d	MIDI add-on to I/O podule	28.95
0273d	MIDI Podule (Acorn)	66.95
1948b	MIDI upgrade to Podule	15.00
0874g	Multipod Professional I/O	115.95
0158d	SCSI 16-bit card (Oak)	189.95
0870f	SCSI podule (Acorn)	279.95

Archimedes / A3000 General Add-Ons

0900b	PC Emulator (Acorn)	88.95
0794b	Spiral Keystrip Holder	2.56
1965g	Teletext Adaptor (Morley)	125.00

A3000 Memory Expansion

0133d	1Mb RAM Card (Beebug)	95.00
0130d	1Mb Upgradeable RAM card	105.00
0131f	3Mb RAM Card (Beebug)	249.00
0132f	1 to 3Mb Upgrade for 0130	155.00

A3000 External Disc Drives

1961g	External 3.5" drive (Morley)	125.00
0288g	External 5.25" drive (Morley)	169.00

NEW
Beebug's range of SCSI drives for the A3000

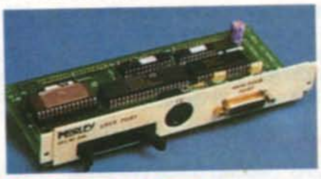
SCSI Hard Drives for A3000

Beebug drive. Supplied with internal controller card.

5200g	A3000 SCSI 20Mb	399.00
5201g	A3000 SCSI 45Mb	499.00
5202g	A3000 SCSI 80Mb	599.00
5203g	A3000 SCSI 180Mb 15.5ms	899.00

A3000 Add-Ons

0712b	A3000 Keyboard Dust Cover	4.30
0801e	Monitor Plinth (Acorn)	29.00
0896c	Podule case	14.96
0277a	Serial Chips *	19.00



A3000 Expansion Cards

0234d	BBC A/D + User Port (Morley)	69.00
0135d	Disc Drive Interface (B'bug)	34.74
0136f	Disc Interface with SCSI	136.91
0238d	MIDI + I/O Podule (Acorn)	49.00
0137c	SCSI upgrade for code 0135	120.44

Scanners & Video Digitisers

1964g	I-Scan (Iriam Instruments)	579.00
1960f	Scan Light Junior A3000	189.00
1963g	Scan Light II (CC)	380.74
1962f	Scan Light Junior (CC)	176.95
0731g	Scavenger A4	342.60
0732f	Scavenger A4 Sheet Feeder	146.96
0730f	Scavenger A6	149.00
0735f	Scavenger A6 for A3000	175.00
0733f	Scavenger A4 for A3000	408.65
0878e	Hawk V9 Colour Digitiser	334.95
1952e	Pineapple Colour Digisiter	273.87

Joysticks and Mices

0723c	Deltacat Joysticks	24.74
0742c	Joystick adaptor Arch (RTFM)	34.99
0743c	Joystick adaptor A3000 (RTFM)	37.99
0722b	Joystick Controller (Serial Port)	20.83
6603c	Deluxe Quickshot Joystick	10.43
0696a	Furry Mouse Cover	6.91
0685b	Mouse House	2.60
0789b	Mouse Mat (blue)	3.04
0788b	Mouse Mat (red)	3.04

JOYSTICK ADAPTORS

Connect an Amiga or Atari Joystick such as the Deluxe Quickshot to your Archimedes.

BEEBUG Ltd, 117 Hatfield Road, St Albans, Herts AL1 4JS
Telephone: (0727) 40303 Fax: (0727) 860263

The Archimedes Specialists
Competitive Pricing

BEEBUG

The Archimedes Specialists
Superb Service

Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...Beebug Computers...

Wordprocessors

0899b	1st Word Plus Version II	72.00
1170b	Easiword (Minerva)	33.95
1975b	Premier 3 (Circle Software)	70.00
5462b	Premier 3 WP application	23.00
1088b	Protext 5.0 (Arnor)	130.39

Spreadsheets

0954b	Intersheet II (CC)	24.95
1084d	Logistix (Acorn)	89.00
1998b	Schema (Clares)	107.35
0931b	Sigmasheet (Minerva)	43.44

DeskTop Publishing

1089c	Desk Top Publisher (Acorn)	125.00
1113c	Impression II (CC)	158.00
1115b	Impression Junior (CC)	89.00
1077b	Tempest (Clares)	125.00
0108b	Ovation (Beebug)	99.00

Integrated Packages

5427b	Desktop Office (Minerva)	109.95
0901d	Pipedream 3 (Colton)	125.00

Databases

1913b	DataVision (Silicon Vision)	123.86
1992b	Flexifile (Minerva)	125.95
0987c	Flying Start II (Mitre)	84.95
1900b	Genesis (Software Solutions)	79.95
5460b	Carousel (for Genesis)	39.95
5448b	Genindex (for Genesis)	29.95
0910b	Knowledge Organiser (Clares)	45.00
0100b	Masterfile II (Beebug)	19.13
0989d	Multistore (Minerva)	199.95
5447b	Squirrel (Digital Services)	129.00
0921c	System Delta Plus vII (Minerva)	55.00

Accounting Packages

5458d	Business Accounts (Minerva)	379.95
0947b	Home Accounts (Minerva)	40.00
1159c	MicroTrader Accounts	199.00
1916c	MicroTrader Stock Control	75.00
1914d	Office Tools (Silicon Vision)	299.95
1917b	Share Holder (Silicon Vision)	161.09

Arcade Games

1930b	Apocalypse (4th Dimension)	24.75
0997b	Arcade Soccer	17.00
54450b	Ballarena	17.35
1931b	Battle Tank (Minerva)	12.35
5455b	Blowpipe (Eclipse)	17.35
1978b	Break 147 (4th Dimension)	20.65
1995b	Chock Away (4th Dimension)	20.62
1187b	Conquerer (Superior)	19.00
0952b	Corruption	20.61
1979b	Drop Ship (4th Dimension)	16.48
1070b	E-Type (4th Dimension)	16.48
1058b	E-Type Designer (4th Dim.)	14.00
0999b	E-Type Extra 100 miles (4thD)	14.00
1929b	Fireball 2 (CIS)	21.70
0944b	Fish	20.64
1980b	Guild of Thieves	20.65
0964b	Holed Out (4th Dimension)	16.48
0993b	Holed Out Designer (4thD)	16.48
0991b	Holed Out Extra 1 (4thD)	14.00
0992b	Holed Out Extra 2 (4thD)	14.00
1984b	Hostages (Superior)	17.35
1901b	Inertia (4thD)	17.35
1993b	Interdictor II (Clares)	27.95
1902b	Man at Arms (4th Dimension)	17.35
1987b	Manchester United	16.48
1903b	Nevryon (4th Dimension)	17.35
0946b	Pacmania	16.48
1999b	Pysankie (4th Dimension)	16.48
1994b	Real McCoy (4th Dimension)	24.75
1991b	Redshift (Minerva)	14.83
1122b	Repton 3 (Superior)	16.48
1933b	Rotor (Arcana)	20.70
5451b	Starch	13.00
0990b	Stranded	24.74
1986b	Superior Golf & Construction	16.48
5452b	Superpool (4th Dimension)	17.35
0998b	The Olympics (4th Dimension)	16.48
1981b	The Pawn	20.65
0963b	Thundermonks (Minerva)	12.35
0994b	U.I.M. (4th Dimension)	24.74
1109b	White Magic II+designer	16.48
5453b	Wimp Game (4th Dimension)	17.35
5456b	Worldscape (Eclipse)	17.35
1179b	Zarch (Superior)	16.48

Languages

0938c	ABC Basic Compiler (Dabs)	84.95
0897c	ABX Utils for ABC (Dabs)	44.00
1085d	ANSI C release 3 (Acorn)	128.95
0107c	ISO C Dev. System (Beebug)	77.39

Music & MIDI

1091b	Armadeus (Clares)	66.21
0904c	EMR Creations set (6 discs)	43.39
0948c	EMR Studio 24 Plus v2	164.35
1971b	EMR MicoStudio	68.70
0995d	Inspiration (Pandora)	260.00
0239f	Pandora PMI-4 Midi Interface	179.95
1997b	Rhapsody (Clares)	41.36
5457b	Tracker (Serial Port)	41.95

Utilities

1946b	ARC-DFS (Dabs)	24.74
0102a	DFS Reader (Beebug)	9.06
0106b	Hard Disc Companion (B'bug)	33.91
5445b	Investigator II (Serial Port)	24.30
1990b	PC Access (Minerva)	33.91
0796b	Serial Link Disc (Beebug)	15.79
1908b	Star LC10 Colour Driver (Ace)	14.95

CAD

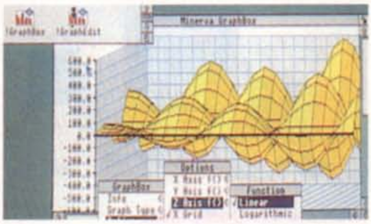
0911c	Autosketch II	75.00
0913c	PCB + autorouting	161.95
1909d	PCB Proffessional	310.95
0959d	P.D.T. (Oak)	349.95
1936c	WorraCAD (Oak)	73.95

Drawing / Painting

1103c	Artisan II (Clares)	54.95
0962b	Atelier (Minerva)	79.95
0937c	Pro-Artisan (Clares)	79.95

Graphics Manipulation

1976b	FontFX	10.00
1938c	Mogul (Ace)	19.00
19143b	Poster (4mation)	84.95
1078c	Render Bender (Clares)	58.00
1912c	Solids Render (Silicon Vision)	123.87



Presentation Graphics

0932c	GammaPlot (Minerva)	49.95
0912c	Graph Box inc Hotlink (Min.)	64.00
0908b	Presenter II inc Hotlink (Lindis)	46.95
5429c	Presenter Story (Lindis)	159.00

Outline Fonts

1920b	Font Starter Pack (Acorn)	40.95
1921b	Newhall Font Pack (Acorn)	40.95
1922b	Symbol Font Pack (Acorn)	40.95
0111b	Outline Font Pack 1 (Beebug)	47.39

Educational Software

1008c	Desk Top Stories (Resource)	32.95
0935b	Dread Dragon Droom	25.95
1193b	Fun School II (0-6 years)	16.48
1194b	Fun School II (6-8 years)	16.48
1195b	Fun School II (8+ years)	16.48
1150c	Jigsaw (4mation)	29.00

Books

There is no VAT to pay on books

1211b	Arch Assembly Language	12.95
1246b	Archimedes First Steps	9.95
1243c	Arch Operating System	14.95
1208b	Basic V : A Dabhand Guide	9.95
1245g	RISCOS Prog. Ref. Manual	79.00
1207c	30 Hour Basic	12.95

Communications

3110f	Amstrad SM2400 Modem	217.35
0779f	Linnet Modem	120.83
0101d	Hearsay comms Software	60.00

AMSTRAD SM2400
A high performance V22/V23 modem complete with Archimedes lead.
With Free Hearsay package (worth £69)

BEEBUG Ltd, 117 Hatfield Road, St Albans, Herts AL1 4JS
Telephone: (0727) 40303 Fax: (0727) 860263

The Archimedes Specialists
Competitive Pricing

BEEBUG

The Archimedes Specialists
Superb Service

Beebug Computers.. Beebug Computers.. Beebug Computers.. Beebug Computers.. Beebug Computers.. Beebug Computers.. Beebug Computers.. Beebug Computers.. Beebug Computers.. Beebug Computers..

Monitors

0189g	Acorn Colour Monitor	216.95
0530g	Microvitec 1431/MS	174.95
0531g	Microvitec 1451/MS	218.95
0527g	Microvitec CUB3000	192.95
0503g	Philips BM7502 (Green)	74.95
0504g	Philips CM8833	214.95
0537g	Philips CM8833 Mk II	214.95
0506g	Taxan 775 MultiSync	399.00
0511g	Taxan 795 Trinitron Multisync	499.95
0508g	Taxan Viking II/R140 (mono)	719.95

Three New Star Printers
The Star LC200, LC24-200 and LC24-200

Matrix Printers

0379g	Epson LQ400	206.95
0329g	Epson LQ550	277.95
0327g	Epson LQ860	539.95
0378g	Epson LX400	139.95
0322g	Epson LX850	209.95
0299g	Panasonic KX-P1081	124.95
0389g	Panasonic KX-P1124	239.95
0388g	Panasonic KX-P1180	129.95
0346g	Star FR10	309.95
0347g	Star FR15	399.95
0337g	Star LC24-10	195.00
0335g	Star LC10 (mono)	129.00
0343g	Star LC15	286.95
0338g	Star LC24-15	347.95
0436g	Star LC200	185.00
0404g	Star LC24-200 Mono	228.95
0402g	Star LC24-200 Colour	264.95
0339g	Star XB24-10	379.00
0340g	Star XB24-15	489.00

Matrix Printer Accessories

0357d	Epson S'feeder LX/LQ400	69.00
0349d	Epson S'feeder LQ550	76.95
0363e	Epson LQ Multifont card	95.00
0435d	Epson RS232 interace 0k	36.00
0434d	Epson RS232 interface 8k	79.00
0512d	Star S'feeder for LC24-10	55.00
0443e	Star S'feeder for LC10	64.95
0395d	Star S'feeder for XB/FR	89.95
0513b	Star 32k RAM for LC/XB/FR	55.00
0458c	Star Parral. to Serial convert.	55.00
0341d	Star XB/FR Colour Kit	35.00

Printer Ribbons

All ribbons are manufacturers originals.

0437a	Epson FX/LX800,FX/RX/MX80	4.95
0403b	Epson FX/RX/MX100,FX1000	6.42
0445a	LQ850/800,LQ500/550,LQ400	5.99
0413a	Epson LX80,LX86, LX400	3.95
0449a	Star LC10 Black	4.00
0450a	Star LC10 Colour	6.00
0467a	Star XB24-10/15 Black	6.95
0459a	Star XB24-10/15 Colour	12.50
0432a	Star LZ24 ribbon	8.00

Inkjet Printers

0430g	Canon BJ-10e (Black case)	299.95
0431g	Canon BJ-10e (White case)	289.95
0478g	Canon BJ130e	434.95
0399g	Integrex 132 Colourjet	515.00
0464g	HP DeskJet 500	427.05

Inket Accessories

0465a	Canon BJ10e Cartridge	17.99
0313c	BJ10e Auto Sheet Feeder	54.00
0314b	BJ10e NiCad Battery pack	39.99
0479b	Canon BJ130e Cartridge	12.65
0502d	BJ130e Pin Tractor	40.00
0493b	Deskjet Ink Cartridge	14.95
0492b	Deskjet+ FX80 Emulation	55.24
0409b	PJ1080/Integrex Black Cartr.	11.25
0410b	PJ1080/Integrex Colour Cartr.	19.50
0398b	Integrex Paper Roll	6.50

Laser Printers

0496g	Laser Direct (CC)	949.00
0497g	Laser Direct Hi-Res Card	350.00
0498g	Canon LPB-4 for above	825.00
0393g	Panasonic KX-P4450i	1321.60
0472g	Qume Publisher II	2207.83
0471g	Qume Super Series II	1156.48
0480g	Star LaserPrinter 8 II	1099.00
0481g	Star Laserprinter 8 DB	1535.00
0482g	Star LaserPrinter 8 DX	1789.00
0483g	Star StarScript	1575.00

Laser Accessories

0474c	Qume CrystalPrint Toner	64.00
0370c	KX-P4450/I Toner Kit	27.78
0488c	StarLaser Toner Cartridge	90.48
0304d	Canon LPB-4 Toner	69.95

Beebug Christmas Open Day

Beebug, in conjunction with A&B magazine, is staging another of its popular open days at its modern premises in St Albans. A number of visiting companies, including Acorn will be demonstrating their latest products. You could even pick up a bargain for Chrismas!

Sunday 25th November, 1990
10am - 4pm

TEST FLIGHT

Why not visit our showroom and experience the Acorn Test Flight. You could win a trip on Concorde, a flying lesson weekend or a Helicopter lesson.

Beebug is an Acorn Premier Dealer and have been involved with Acorn products for over 8 years. We pride ourselves on our after sales service.

Phone (0727) 40303 for a free catalogue.

BEEBUG SHOWROOM

Our large modern showroom in St Albans has a wide range of Acorn related products on demonstration. Friendly, helpful staff will be pleased to discuss your requirements with you.

Opening Hours:
Monday-Saturday 9.00am - 5.30pm
Late night Thursday to 8.00pm

ORDERING INFORMATION

All prices exclude VAT. We accept Access Visa, Connect cards and cheques drawn on UK Banks. Orders from education and PLC's are most welcome. 80% of all orders are dispatched within 24 hours, but allow up to 28 days for goods which are out of stock. An acknoldgement of order is sent by return if goods are out of stock. All sales subject to our standard terms & conditions.

Product Code	**UK, BFPO & Channel Islands** ***(P&P Prices include VAT).***
a	*£0.60*
b	*£1.50*
c	*£2.50*
d	*£3.50*
e	*£4.50*
f	*£5.50 Courier - mainland UK only*
g	*£8.00 Courier - mainland UK only*
	£15.00 (24 hour courier - UK mainland only)

BEEBUG Ltd, 117 Hatfield Road, St Albans, Herts AL1 4JS
Telephone: (0727) 40303 Fax: (0727) 860263

DESKTOP OFFICE

THE INTEGRATED SUITE FOR ARCHIMEDES

DATABASE

WORD - PROCESSOR

SPREADSHEET

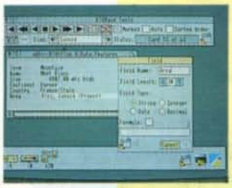
GRAPHS & CHARTS

COMMUNICATIONS

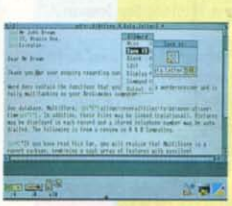
£129-95 Incl. VAT

DATABASE

communications



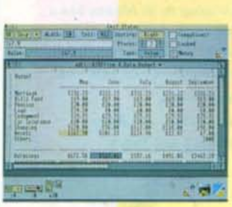
At last - a fully integrated suite of database, word - processor, spreadsheet, charts and communications for the Archimedes. The database is simple to set up with a flexible card layout enabling you to design cards to suit your data. Video style controls make it easy to browse through the records. With instant search on fields, sort routines and reports available, DTOBase gives flexibility whilst remaining simple to use.



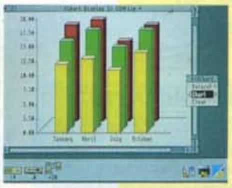
The word - processor, DTOWord is ideal for all types of correspondence, with the ability to change text to bold or condensed, indent, centre, justify etc. DTOWord makes every document look professional. Text can be any colour and even displayed in large characters on screen making this package ideal for young children or those with poor sight.

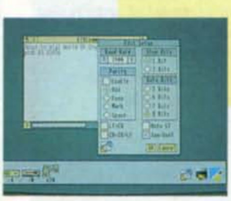
word - processor

SPREADSHEET



DTOSheet is fast and powerful but designed for ease of use. Columns can be held for reference and cells locked to prevent accidental deletion. With colours available to highlight negatives or formulae DTOSheet gives all the features you would expect of a high class spreadsheet. Data can be exported directly into DTOChart allowing pie charts, 3D bar charts, etc to be produced in seconds. Sections of pie charts can be highlighted and the colours changed to your requirements.

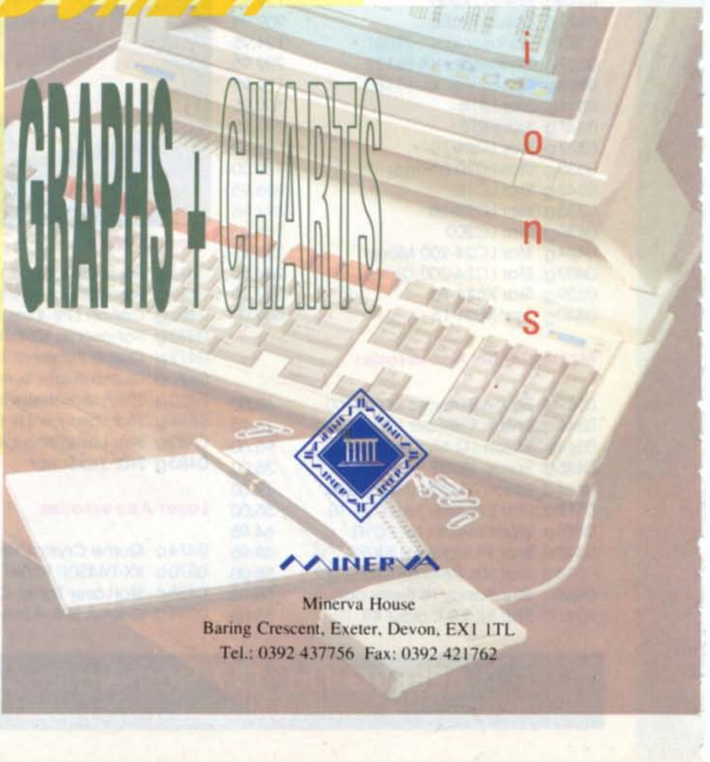




The final package in the suite is the communications program DTOComms. Multi - tasking, even on line, DTOComms supports ANSI and TV1925 emulations and is configurable for all baud rates and protocols. Text files can easily be transmitted and received.

DeskTop Office is a fully integrated, multi - tasking suite of programs for the Archimedes and A3000. Data can be transferred between the programs giving the ultimate in flexibility to produce graphs from your spreadsheet data or similar applications.

DeskTop Office is all you need for Education, Small Business or Home use.



MINERVA

Minerva House
Baring Crescent, Exeter, Devon, EX1 1TL
Tel.: 0392 437756 Fax: 0392 421762

EAS!WORD

word - processor

Easiword is simplicity in itself and ideal for everyday word-processing needs. Easiword has all the facilities of DTOWORD together with the extra facility of multiple documents.

£39-95 Incl. VAT

COMPUTER SHOPPER SHOW'90 UPDATE

Two million pound show bonanza

VISITORS can look forward to a bumper Christmas after they visit the Computer Shopper Show. Hundreds of Acorn market products at special show prices will mean lots of bargains.

A pre-show survey has revealed that special offers and discounts on hardware, software, add-ons and peripherals could top the £2 million mark this year.

The 26,658 visitors to last year's inaugural show at Alexandra Palace saved around £1 million on special offers. An exit poll of attendees showed that more than 95 per cent considered purchases there had resulted in substantial savings with reported figures ranging from £50 to £1,000.

This year the larger venue of Wembley Conference Centre will accommodate many more stands and with an extra day added, Shopper '90 is tipped to double that record.

Acorn will have a major presence at the show flanked by a strong contingent of their third party suppliers. In addition to their New Horizons conference which runs throughout the show, Acorn staff will be on hand to demonstrate their latest key products.

The Archimedes and A3000 versions of The Learning Curve package will be on show as part of Acorn's Test Flight promotion which allows customers to try out the bundles and test their skills on Clare's flight simulator Interdictor.

There are plans to house Interdictor in a specially built cockpit and to provide a top pilot against whom visitors can show their prowess. Those who test fly The Learning Curve can also enter a free competition with the chance to win flights on Concorde, helicopter and light plane flying lessons and Citizen Aerochron watches worth £250.

Demonstrations of a number of new Archimedes products from Computer Concepts will take place during the show. These will include DTP package Impression 2, Impression Junior, Equasor and Laser Direct, billed as the fastest Archimedes laser printer.

Also on hand to show off their range of new products will be Minerva Software. Top of the list will be multi-tasking relational database FlexiFile, PC Access which allows users to turn their Archimedes into a PC using MS Dos commands, and Desktop Office, an integrated suite including database, wordprocessor, spreadsheet, charts and communications modules.

As can be expected from the Acorn market, a wide range of educational software will be exhibited.

Covering primary, GCSE and A level courses, LCL Educational

➤

6th to 9th December
Wembley
Conference
Centre
COMPUTER
SHOPPER
SHOW 90

How to get there

READERS of *The Micro User* wanting to get their share of this Christmas bonanza will welcome the convenience of the Wembley venue. It is easily reached by public transport and car.

Buses serving Wembley Arena are numbers 83, 92 and 182 while the number 18 stops at The Triangle, a five minute walk away. The number 297 stops at Wembley Park Station and the 245 at Bridge Road.

By Underground, the Jubilee or Metropolitan (Stanmore) lines take you to Wembley Park and at peak times, Bakerloo can be taken to Wembley Central.

Regular trains run to Wembley Central from Euston or Broad Street and to Wembley Stadium from Marylebone. By car, Wembley is easily reached from the M25, M40, M4 or M1.

The Shopper Show runs from Thursday December 6 to Sunday December 9 at Wembley Conference Centre and will be open from 10am to 6pm on the Thursday and Friday; 9am to 6pm on Saturday and 10am to 5pm on Sunday

Admission is £5 for adults, £3.50 for children under 16 with £1 off for tickets booked in advance. Also available is a prepaid family ticket covering two adults and two children for £12.

● There is a voucher for reduced priced tickets on Page 43. Book in advance using the 24 hour credit card hotline. (051-357 1736)

Helping Hand

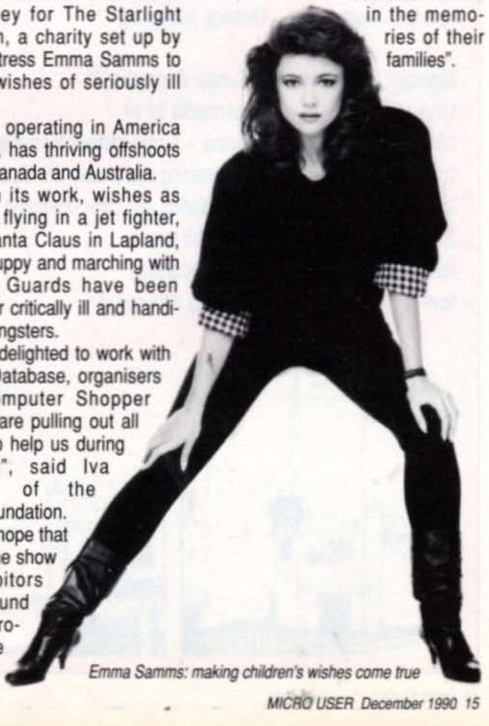
The Computer Shopper Show 1990 will be used as a vehicle to raise money for The Starlight Foundation, a charity set up by Dynasty actress Emma Samms to grant the wishes of seriously ill children.

Starligh, operating in America since 1982, has thriving offshoots in Britain, Canada and Australia.

Through its work, wishes as diverse as flying in a jet fighter, meeting Santa Claus in Lapland, owning a puppy and marching with the Scots Guards have been arranged for critically ill and handicapped youngsters.

"We are delighted to work with Blenheim Database, organisers of the Computer Shopper Show who are pulling out all the stops to help us during the event", said Iva Sheinbart of the Starlight Foundation.

"It is our hope that visitors to the show and exhibitors will rally round and help provide these unfortunate children with a moment of happiness that will live in the memories of their families".


Emma Samms: making children's wishes come true

COMPUTER SHOPPER SHOW'90 UPDATE

➤

Software will be demonstrating their series of 24 program packages and will use the show to launch the new version of Micro English.

This now includes Oral Communication ,which is a new part of the 1991 syllabus. Also on show will be the latest in the top-selling Fun School range from Database Software – Fun School 3.

Visitors will be treated to a wealth of new games software from The 4th Dimension. Ten new or recent Archimedes titles will be displayed.

A new computer dictionary for BBC Micros will be aimed at crossword fans by Akom. Alongside the new offering will be Akom's series of Times Computer crosswords.

The latest in the Dab Hand Guide series of books will be on offer from Dabs Press together with a number of games from the company's Alien Images label and a range of new 8 bit games will be given an airing by CDS Software.

This is just a flavour of the wealth of Acorn-specific products which will be offered at Shopper. A host of other hardware, software, peripherals and add-ons will be joined by many general computer goods to make the show a must for the pre-Christmas shopper.

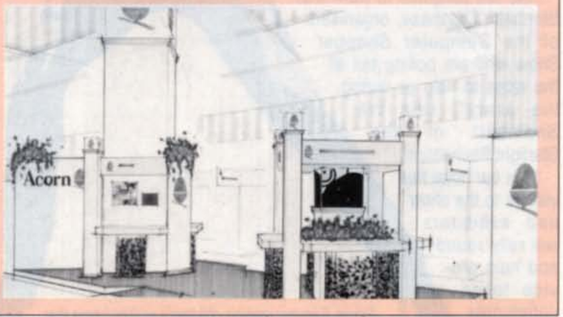
Acorn Conference Timetable

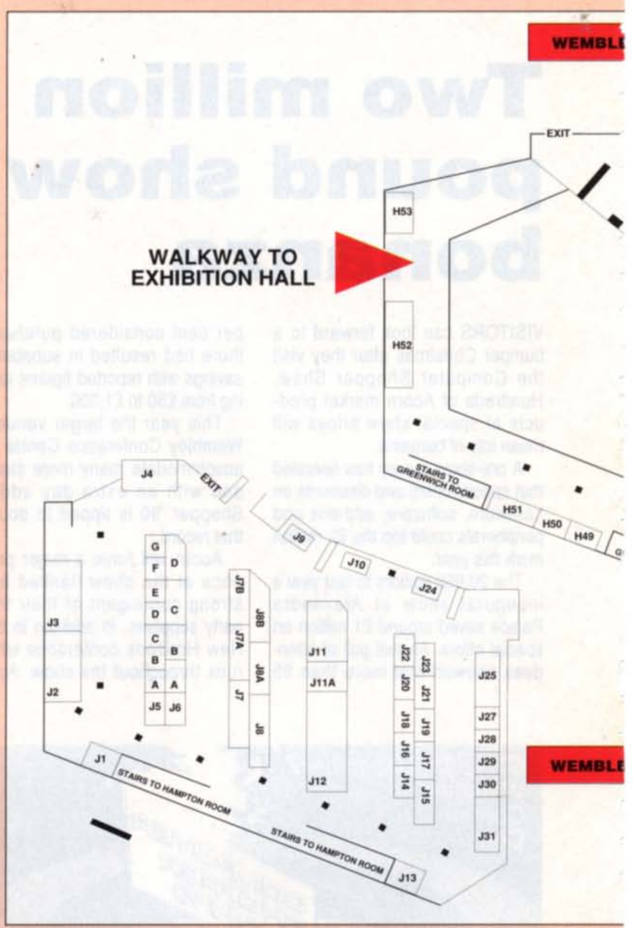
Thursday December 6 and Friday December 7

11am to 11.50am	CD Rom in education
12noon to 12.50pm	Schema – A spreadsheet for the family
1pm to 1.50pm	Image processing
2pm to 2.50pm	PC emulating and other operating systems
3am to 3.50pm	Music Midi mania
4pm to 4.50pm	Risc technology in the 1990s
5pm to 5.50pm	Desktop publishing

Saturday December 8 and Sundar December 9

11am to 11.50pm	Hypermedia for all
12noon to 12.50pm	Schema – A spreadsheet for the family
1pm to 1.50pm	Programming made easy with Basic 5
2pm to 2.50pm	PC emulating and other operating systems
3pm to 3.50pm	Music Midi mania
4pm to 4.50pm	Faster computing
5pm to 5.50pm	Designing documents

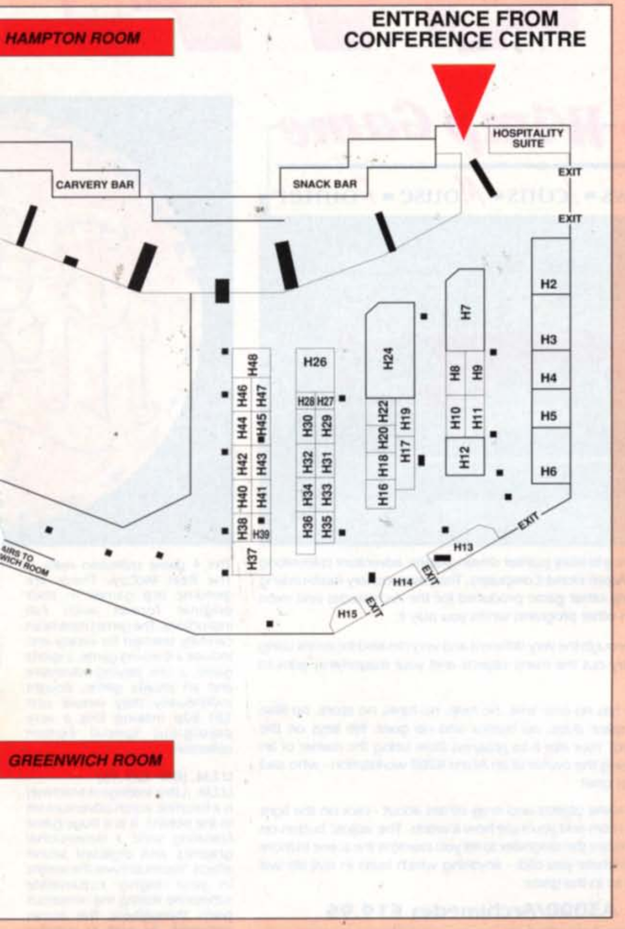




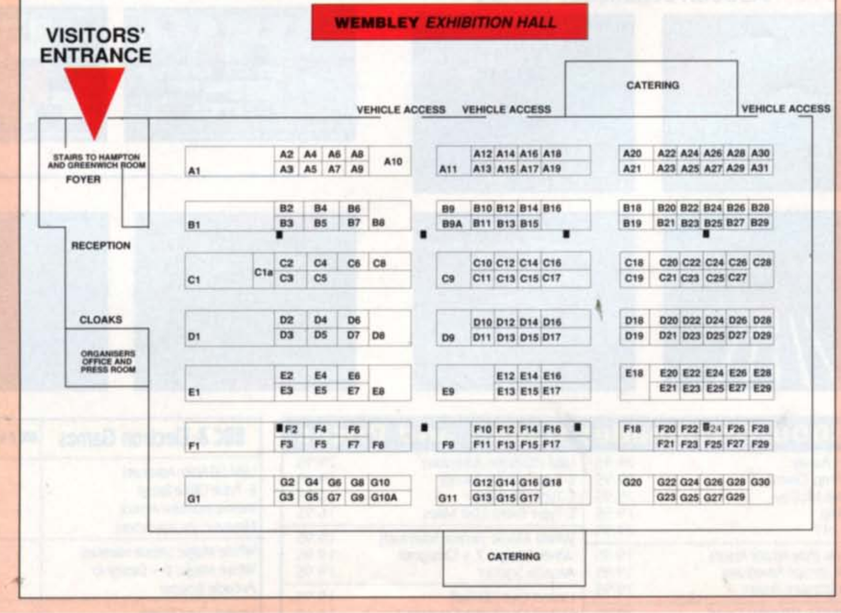
A to Z Computer Services	C11/C13
Ablac	D19
Acolyte	E13
Acorn	J12
ACSL	B18
Admincure	F8
Advanced Console Entertainment	H6
Advantage	G20/G21
Akom/LCL	A9
Aladdin Computers	A5
Alf Payne	E14/E16
Allied Dunbar	D19
Alphaprint	F24/F26
Amstrad/Amstrad User Club	D1
Anco Software	H37
Andrews & Cowan	H30
Andromeda	H34
AR Enterprises	A19
Arc Software (Atari UK)	H16
Arnor	C17
Aztez Products	H44
B & B Computers	G4
B Bytes	J6b
BCS	G16
Beebug and Risc User	J21
Beebug Ltd	J25/J26
Belgravia Data	B17
Bits 'n' Bytes	E19
Blackmore Electronics	C10
Blackstuff Ltd	A15
Cal–Abco	E3
Calderglen Computers	J11a
Cambridge International Software	J24
Care Electronics	C19
Caspell Computers	B5
City Desk	A25
C D S Software	A26
Chamber of Commerce	
Clockwork Software	G6
Composit Software	G23/G25
Compo Software	F21/F23
Compulynk	B4
Compumail/Compusys	E1
Computer Concepts	J7
Computer Disks & Ribbons Ltd	G5/G7/G9
Computer Express	C21
Computerlab	H7
Computer Lynx	H27
Computer Manuals	C16/C18
Computer Shopper Advice Centre	F1
Computing Plus	A3
Concita Micro Systems	J10
Condor Computers	G11
Confidential Computer Services	A21
Creative Technology	G15/G17
Dab Hand Computing	J11
Dabs Press	J6a
Database Publications	E9/E10/E11
Data Fern	D24/D26
Data Protection	E2
Dealer Technology	A17
Delta Leisure	F9
Dennis Publishing	D12/D14/D16
Department of Trade & Industry	
Diamond Computers	G1
Digiserve	D21
Digita International	B2
Dolan Electronics	A16
Dowling	E15/E17
DS Computer Supplies	E4
E C A	A28
Eclipse Computer Supplies	C8
E E C Ltd	E23
Electro Music Research	J9
Encyclopaedia Britannica	B19
European Peripheral Distribution	A6
Evesham Micros Centre	G18/G19
Finebuild	E21
First Stop Computer Supplies	A22/A24
Folio Shareware	G12/G13/G14

COMPUTER SHOPPER SHOW'90 UPDATE

Three halls – and nearly 300 stands


HAMPTON ROOM
ENTRANCE FROM CONFERENCE CENTRE
HOSPITALITY SUITE
CARVERY BAR
SNACK BAR
EXIT
EXIT
H2
H3
H4
H5
H6
H7
H8
H9
H10
H11
H12
H13
H14
H15
H16
H17
H18
H19
H20
H22
H24
H26
H27
H28
H29
H30
H31
H32
H33
H34
H35
H36
H37
H38
H39
H40
H41
H42
H43
H44
H45
H46
H47
H48
EXIT
EXIT
EXIT
STAIRS TO GREENWICH ROOM
GREENWICH ROOM

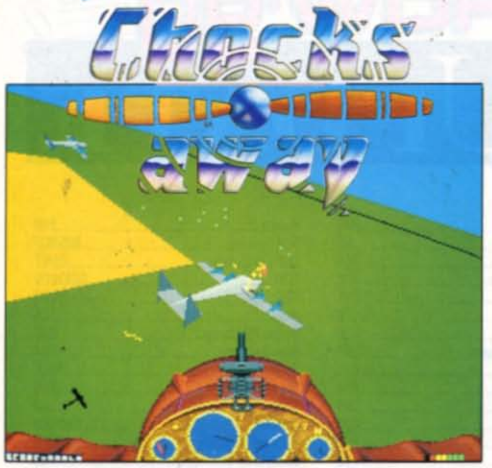
Fourth Dimension/Impact Software	J8
Frontier Software	E6
Future Publishing	A10
Gasteiner Technologies	C6
G F A	G29
Gemini Shareware	H2
Genesis	H28
G P S	C15
G S T Software	C5/C7/C8a
Harpers	C3
HiSoft	G30/G31
Hi–Tec Modems	A30
Hywin Media	C20/C22
I B S	B10
Impressions	H31
Jen Grove	B24/B26
J S C Systems	A27/A29
Kador	B28
Kaplocom Computers	B20/B22
Kuma Computers	G2
Leax Hardware	F2
Leonardo Systems	F25
Lindis International	J31
Logic Sales	A18
London Chamber of Commerce	
Mandarin	D8
Manor Court Supplies	G10a
Margin Maker	D3
MCD Software Ltd	B11/B13/B15
MD Office Supplies	A11
Media Change	G6
Media Direct	G4
Media Value	G3
Mediaware	E8
MFM	H15
Micro Anvika	G24/G26/G28
Micro Media Computer Supplies	E29
Micromart UK Ltd	F3
Microshack	F12/F13/F14/F15
Micro Smart	F18/F19
Microtec	H19
Microtext	B7
Microware	D27
Miles Better Software	E18
Mindscape	D10/D11
Minerva Systems	J16/J18
MMDI	H26
Moore Business Systems	F5/F7
Multiplex	C1a/C1b
Mutant Software	B14
Nada Concepts Ltd	D29
Nadi Systems	G22
Naga Trading	B12
Nasa Promotions	F28
Nhancer	D13/D15
Nintendo/San Serif	H24
Nortek Computers	B21/B23
Norphone Ltd	E25
Norwich Computer Services	J23
Oak Computers	J11
Ocean	H29
Office of Data Protection Registrar	E2
Olivetti	A1
OMD	D9
PC Independent User Group	D18
PC Serve	C2/C4
Pink Software	C9
Pinnacle Systems (SW) Ltd	C24/C26
PML	F29
Portobello	A7
PRES	J14
Print Rite	A23
Professional Solutions	D17
Proton Software	E26/E28
Public Dominator	E12
QD Enterprises/The Serial Port	J22
Ranger Computers	E27
Real Things	F11
Redka	A8
Riverdene PDL	G8
Rombo	F16
SCA Systems	B25/B27
SCS Computers	E5/E7
SDC	D2/D4/D6
SDL	B1/B3
Sega	C1
Senlec PD Library	G27
Siren Software	E24
SK Marketing	D5/D7
Sky Office Supplies	B16
Softcover International	C9
Softville	C28/C29
Software Selection	F4/F6
South West Software Library	B29
Sphere Micro	F27
Supertech Systems	B6
Supervision Electronic	A31
Technomatic	C23/C25
The Avenue Group	G6
Themis UK	J4
The Software Squad	C12/C14
Third Coast Technologies	B8
Thurston Techniques	J20
Tofware International	F20/F22
Topologica	J5a
Traderdesk	A20
Turbosoft	A12/A14
UK Home Computers	D23/D25
US Action	B9
Videk	A2/F17
Vine Micros	G10
Virgin Mastertronic	C1
VNU Publications	D20/D22
Weserve	F10
Westoning Ltd	A13
Westpoint Creative	E20/E22
Wight Scientific	A4
Wild Vision	J27
WTS Electronics	D28
XL Sales & Marketing	H33


WEMBLEY EXHIBITION HALL
VISITORS' ENTRANCE
STAIRS TO HAMPTON AND GREENWICH ROOM
FOYER
RECEPTION
CLOAKS
ORGANISERS OFFICE AND PRESS ROOM
CATERING
VEHICLE ACCESS
VEHICLE ACCESS
VEHICLE ACCESS
A1
A2 A4 A6 A8
A3 A5 A7 A9
A10
A11
A12 A14 A16 A18
A13 A15 A17 A19
A20
A21
A22 A24 A26 A28 A30
A23 A25 A27 A29 A31
B1
B2 B4 B6
B3 B5 B7 B8
B9
B9A
B10 B12 B14 B16
B11 B13 B15
B18
B19
B20 B22 B24 B26 B28
B21 B23 B25 B27 B29
C1
C1a
C2 C4 C6 C8
C3 C5
C9
C10 C12 C14 C16
C11 C13 C15 C17
C18
C19
C20 C22 C24 C26 C28
C21 C23 C25 C27
D1
D2 D4 D6
D3 D5 D7 D8
D9
D10 D12 D14 D16
D11 D13 D15 D17
D18
D19
D20 D22 D24 D26 D28
D21 D23 D25 D27 D29
E1
E2 E4 E6
E3 E5 E7 E8
E9
E12 E14 E16
E13 E15 E17
E18
E20 E22 E24 E26 E28
E21 E23 E25 E27 E29
F1
F2 F4 F6
F3 F5 F7 F8
F9
F10 F12 F14 F16
F11 F13 F15 F17
F18
F20 F22 F24 F26 F28
F21 F23 F25 F27 F29
G1
G2 G4 G6 G8 G10
G3 G5 G7 G9 G10A
G11
G12 G14 G16 G18
G13 G15 G17
G20
G22 G24 G26 G28 G30
G23 G25 G27 G29
CATERING

A3000
ARCHIMEDES
BBC B/MASTER
ELECTRON

THE 4TH

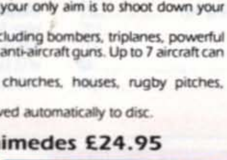
Chocks Away



Chocks Away is flight simulation the way you've always wanted it. It has everything for the beginner and the expert:

- Beautiful solid 256 colour graphics and 'nerve shattering' digitised sound effects.
- You pilot a very easy to fly, yet highly manoeuvreable bi-plane - ideal for all ages and skill levels.
- Revolutionary 2 player option using split screen display. This allows 2 players to each fly their own planes simultaneously in practice or on missions.
- Full joystick, dual joysticks, mouse and keyboard control options.
- Amazing "Black Box Flight Recorder" included so that you can record your own flights and then save and replay them.
- Learn landing, loops, rolls and other stunts the easy way by watching the 90 minutes of totally absorbing pre-recorded training flights included with the game.
- Powerful 30mm cannon capable of very rapid fire and long range destruction.
- Easy to read instrument panel and simple controls so you can concentrate on developing your flying skills.
- Internal and external views of your plane can be selected at any time from front, rear, left and right.
- 3 very varied immense maps to explore - approximately 18000 km² in total (6000 km² per map).
- 20 fascinating and varied missions of increasing complexity are included to guarantee weeks or even months of enjoyment.
- Promotion system from Cadet status right through to Marshal of the RAF.
- Realistic take-off and landing from runways and aircraft carriers.
- Special 2 player dogfight feature where your only aim is to shoot down your human opponent.
- Superb range of targets and enemies including bombers, triplanes, powerful fighters, tanks, ships, control towers and anti-aircraft guns. Up to 7 aircraft can be in a single encounter.
- Beautiful scenery including bridges, churches, houses, rugby pitches, warehouses, lighthouses and trees.
- Permanent high-score table which is saved automatically to disc.

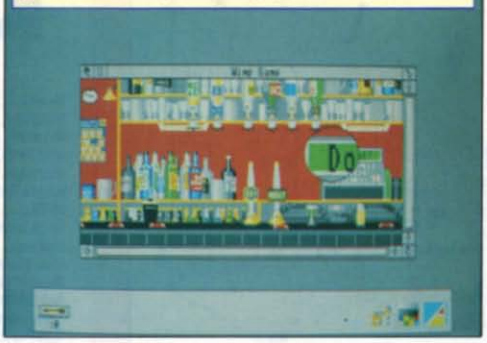
Price: A3000/Archimedes £24.95



Mission Brief
PRESS FIRE

The Wimp Game

*W*indows - *I*cons - *M*ouse - *P*ointer



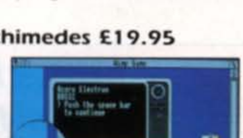
The Wimp Game is a brilliant pointer driven graphic adventure celebrating over 10 years of Acorn Home Computers. This revolutionary multi-tasking game is unlike any other game produced for the Archimedes and even allows you to run other programs whilst you play it.

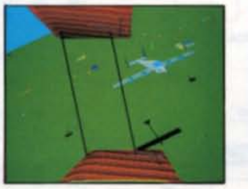
Work your way through the very different and very detailed locations using your pointer to try out the many objects and your magnifying glass to examine them.

The Wimp Game has no time limit, no help, no hints, no score, no little green men, no space ships, no bombs and no guns. No keys on the keyboard are used. Your aim is to progress from being the owner of an Acorn Atom to being the owner of an Acorn R200 workstation - who said they'd already got one?

You can click on some objects and drag others about - click on the light switch in the first room and you'll see how it works. The 'adjust' button on the mouse will activate the magnifier to let you examine the scene in more detail. Be careful what you click - anything which hurts in real life will probably also do so in the game.

Price: A3000/Archimedes £19.95





This 4 game collection really is The Real McCoy. These are genuine top games in their original format with full instructions. The games have been carefully selected for variety and include a thinking game, a sports game, a role playing adventure and an arcade game. Bought individually they would cost £81.80p making this a very prestigious special edition collection.

U.I.M. (RRP £29.95)
U.I.M. (Ultra Intelligent Machine) is a futuristic action adventure set in the oceans. It is a huge game featuring solid 3 dimensional graphics and digitised sound effects. You must travel the oceans in your highly expandible submarine visiting the numerous ports throughout the ocean networks. As well as gaining combat skills you'll need to learn to trade in commodities, shares and currencies. There are over 250 missions to complete before you will find your goal - the U.I.M. - created to be almost a god.

Price: A3000/Arc

AFT SHIELD OUT

A3000/Archimedes Games and Prices

Chocks Away	24.95	UIM (3D Action Adventure)	29.95
The Wimp Game	19.95	E-Type (3D Car Racing)	19.95
The Real McCoy	29.95	E-Type Designer	16.95
Dropship	19.95	E-Type Extra 100 Miles	16.95
Break 147	24.95	White Magic (Arcade Adventure)	19.95
Nevryon (Pure Arcade Action)	19.95	White Magic 2 + Designer	19.95
Pysanki (Arcade Adventure)	19.95	Arcade Soccer	19.95
Inertia (Isometric Action)	19.95	Holed Out (3D Golf)	19.95
Apocalypse (3D Mega Game)	29.95	Holed Out Extra Courses 1	16.65
The Olympics (6 Events)	19.95	Holed Out Extra Courses 2	16.95
Man-At-Arms (Arcade Adventure)	19.95	Holed Out Designer	19.95

All the above Archimedes games will work on the Archimedes A3000, 310 and 400 series

BBC & Electron Games	BBC B and Master 51/4" Disc	BBC and Electron Cassette	Master Compact 31/2" Disc
UIM (3D Action Adventure)	19.95	-	21.95
E-Type (3D Car Racing)	14.95	9.95	15.95
Inertia (Isometric Action)	12.95	9.95	13.95
Nevryon (Arcade Action)	14.95	-	15.95
White Magic (Arcade Adventure)	12.95	9.95	13.95
White Magic 2 + Designer	12.95	9.95	13.95
Arcade Soccer	12.95	9.95	13.95
Holed Out (3D Golf)	14.95	12.95	15.95
Holed Out Extra Courses 1	11.95	9.95	12.95
Holed Out Extra Courses 2	11.95	9.95	12.95

All the above BBC games are compatible with BBC B, B+ & Master Series Computers

DIMENSION

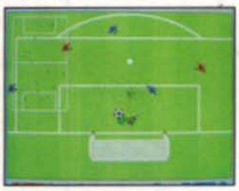
A3000
ARCHIMEDES
BBC B/MASTER
ELECTRON

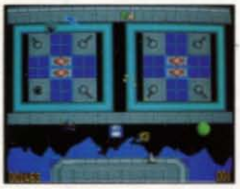
ARCADE SOCCER (RRP £19.95)
Arcade Soccer really is WORLD CUP FOOTBALL ACTION at its very best. Using an overhead view to make gameplay as exciting as possible it features everything that you could want in a football game.

WHITE MAGIC (RRP £19.95)
White Magic is a unique arcade adventure in which you control 4 varied adventurers:- A Leprechaun, Titan, Warrior and Enchanter.
You can transform between all 4 characters at will and use their much needed special abilities. White Magic is not a game for the faint-hearted; it is a fast-action game which requires fierce hand-to-hand combat and frantic weapon fire.

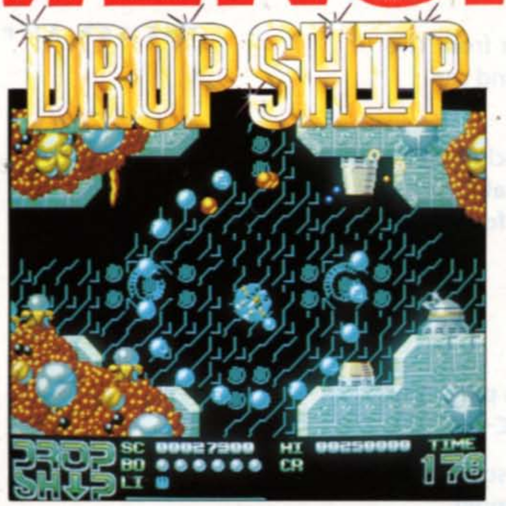
QUAZER (RRP £11.95)
Quazer is a fast action arcade style game with excellent music, sound effects and graphics. It has 11 incredibly detailed and varied vertically scrolling levels filled with the most amazing assortment of baddies you are ever likely to see.

imedes £29.95





DROP SHIP



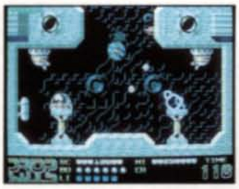
Drop Ship is one of the smoothest and fastest arcade games you are likely to see. It features superb 256 colour graphics, 15 increasingly large and diverse stages and an excellent stereo soundtrack.

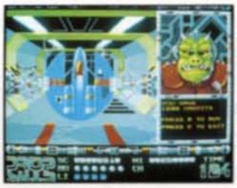
The year is 2020....
The government proudly announces that the new fast breeder farm on the Mars colony is completely computer managed and totally safe, defended from attack at all times by a fully-automated tactical defence system.

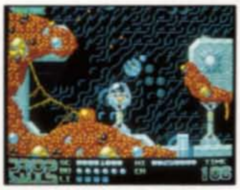
The year is 2030....
Earth receives a transmission from the Mars colony. The radiation seems to have affected the management software at the fast breeder farm. The defence systems have gone haywire and the whole farm is rapidly approaching meltdown. If all the reactors are not shut down the Mars colony will be wiped out....
Shut down can only be achieved by removing and collecting the power crystals from each reactor. An almost impossible task made even harder by the fact that the defence systems are blowing away anything that moves. The defences include gun emplacements, artificial gravity generators, sporers and hoards of deadly aliens.
What is needed is a craft which is supremely manoeuvrable, capable of great speed and possessing awesome firepower, and a pilot of extraordinary bravery to fly it.
The craft is the Drop Ship.....
The pilot is You.....

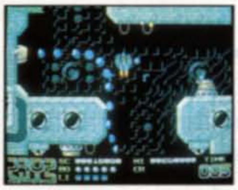
MORE GAME INFO
Frame rate: 50 frames per second
Maximum objects on screen: 150 per frame
The game features completely custom-written screen handling routines
No use whatsoever is made of the operating system routines
The ship movement in the game is accurate down to 0.0001 of a pixel

Price: A3000/Archimedes £19.95

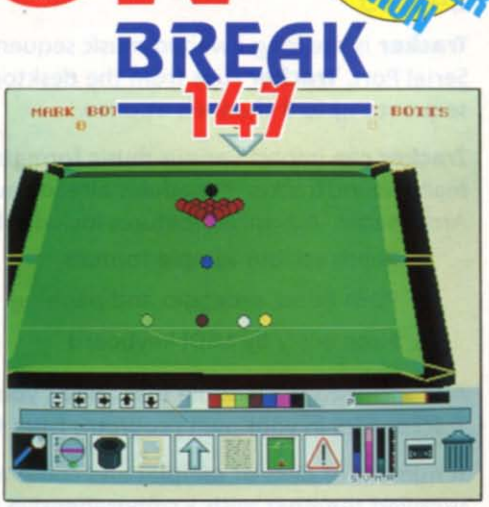








BREAK 147



By any measure snooker is one the most popular sports in the world today. Break 147 has been precisely designed exclusively for the A3000 and Archimedes computers to be as close as is possible to the real game itself.

Break 147 is a full 3D snooker simulation with superb solid graphics and brilliant digitised sound effects, speech and music. The game is controlled exclusively with the mouse.

It features incredibly realistic interaction between the balls and precise control of the cue ball - topspin, backspin, stun, screw, drag, swerve and masse shots. You can view the table from ANY angle or distance even as the balls are moving.

All the rules are fully implemented and you can play matches (against friends or computer players), trick shots or just practice. You will not only be able to replay your last shot but you can also replay whole frames and move in and around the table as you watch it. Highest breaks are saved automatically to disc.

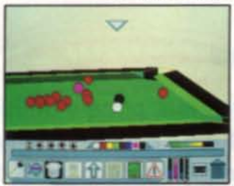
You can even create and edit your own tables so you can design your own trick shots or set up your preferred practice positions. A manual is supplied with each game which gives the fascinating history of snooker and all the rules and instructions required to play BREAK 147.

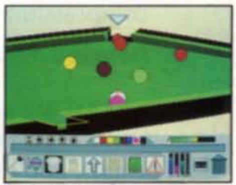
You will find that the game plays as if you were on a real snooker table with all the attendant features to take care of, but with a lot of the tedious parts - such as resetting the table, respotting the balls and scoring - maintained by your computer.

Win a Superb Engraved Trophy
This unique competition allows everyone who obtains a break of 100 or more to win a superb engraved snooker figurine on a solid marble base.

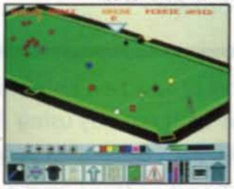
There's also a superb 16" trophy (to be engraved with the winners name) which will be awarded to the first entrant to achieve the maximum break of 147. Full details and entry coupon are included with the game.

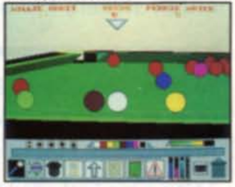
Price: A3000/Archimedes £24.95
Anticipated Release Date: Mid November '90





Screen shots from early development version





... HOW TO ORDER... HOW TO ORDER... HOW TO ORDER...

Dealers

Most of our games are available from most good dealers. If they don't stock them, then please give them a copy of this advert and tell them that they can easily buy them directly from us.

Superfast mail order

Letter
Simply send us a quick letter telling us the versions of the game(s) you require, your name and address, and payment via cheque, postal order or Access Card or Visa details.

☎ Telephone
(0742) 700661 or 769950
Telephone orders welcome
Access and Visa accepted, 24 hour service, 7 days a week.

- **We pay the postage and packing. (UK only). Overseas add £2 per item.**
- **All orders are despatched by 1st Class Post on the SAME day we receive your order!**

The Fourth Dimension, Dept 4444, 1 Percy Street, Sheffield, S3 8AU

The Fourth Dimension

THE SERIAL PORT

TRACKER

£49.95

Tracker is the long awaited music sequencer from The Serial Port. **Tracker** runs from the desktop and can sequence upto 8 channels at once.

Tracker can import various music formats including the many SoundTracker™ modules already available on the Archimedes. Advanced features include the following:

- ▲ Reads various sample formats
- ▲ Pitch bend, arpeggio and panning
- ▲ Note entry by MIDI keyboard

Also included is a module that allows you to play Tracker files in your own programs from RISC-OS.

A number of discs of samples and complete songs are supplied together with a comprehensive manual explaining all the facilities in detail.

INVESTIGATOR 2

£27.95

Investigator 2 is an improved version of the powerful disc utility program from The Serial Port which is compatible with the Archimedes series of computers.

Investigator 2 has all the features of the original plus many enhancements including the following:

- ▲ Runs from the desktop
- ▲ Installs on HardDisc drive
- ▲ Improved disc editing facilities
- ▲ More powerful backup features with greater compression
- ▲ Detailed manual

Also included are a number of new utilities including import and export of data and the ability to create new disc formats; and dumps of disc formats can be made to either screen, file or printer

To purchase a Serial Port production either order direct from us at the address below (you can pay using Access, Visa, American Express or cheque), or contact your local dealer.

(All prices include VAT and postage and packing)

THE SERIAL PORT
Burcott Manor, Wells, Somerset BA 5 1NH
Phone 0243 531194 Fax 0243 531196

UPDATE

Wetlands conservation

BRITAIN'S ponds and wetlands are increasingly being sacrificed on the altar of urban development. Now, BBC Micros and Archimedes machines are being used to educate the next generation in the importance of preserving these vital environmental assets.

Mercury Educational Products (071-287 5060) and Granada Television have linked with The Wildfowl and Wetlands Trust to produce a key datafile supporting the nationawide Pondwatch survey co- ordinated by the Trust. The Key datafiles are used by schools in conjunction with ITV's schools programs and to date, 30,000 have been sold in this country.

This latest datafile inlcudes the results of the Pondwatch survey which started in 1989. More than 500 groups and individuals – a total of 2,500 people – have been involved in the survey throughout the UK. They have monitored local ponds and canals by "dipping" the water over a nine month period.

From this, they have recorded the location of the water source, its physical make-up, its age and its use by man plus the animal and plant life in and around the water.

The huge wealth of results has been entered into the ITV Schools Key datahandling package and a specially written mapping and graphics package has been created to enable schools to analyse and display the results on regional and national maps. A further package will also allow results of schools' own surveys to be displayed and compared with the nationwide results.

"Yuppie urban developments are increasingly draining the wetlands and marshes which are some of our most fertile areas", said Dominic Johnson of Mercury Educational Products. "These areas are micro-communities in their own right and it is vital to the environment that they be preserved. The best way to do that is by starting at the bottom level and educating the children who will be responsible for the environment in years to come."

Software for the Pondwatch Key Datafile is now almost complete. Some final readings will be added in the Spring and it will be available to schools by the end of March next year. Price, £12.

Working with Granada Television, Mercury Educational Products are also to produce a datafile on nitrate pollution in Britain's watercourses.

Pond dipping!

Computer Britannica

A MASSIVE project with scope to make the majority of human knowledge available through Archimedes computers has been undertaken by AVP Computing working in conjunction with Somerset Local Education Authority.

Called Freedom, it uses hypermedia to present teachers and students with powerful programs combining text, graphics, animation and sound.

"This is not just another computer program. It is a major carrier of information which in due course will provide ready made lessons and worksheets for the entire National Curriculum", said Robin Drewett of AVP. "You could view this as a computer version of The Encyclopaedia Britannica but it is even more than that. All human knowledge could be funnelled through this."

The initiative has started with science subjects which have had input from most of the heads of science in Somerset LEA and members of Somerset TVI plus AVP's own education writers. Five AVP programmers are working full-time to produce the first topics due out in January. They will cover Food Technology, Energy, Food and Fitness and Human Anatomy.

"These are just the tip of the iceberg", added Robin Drewett. "Freedom will be like opening the gates of the British Library but most important of all will be its ease of use. Within one minute of a new users seeing this program, we would expect them to be able to have a useful science lesson on their desks. It is absolutely straightforward.

"Freedom is also a tool and a servant to teachers, not the tyrannical slavemaster which is what computers are for a lot of teachers."

Lessons covering specific subjects, statements of attainment or any other criteria can be easily extracted from the programs then altered or adapted to suit individual needs. Any page of text or illustration can be easily printed out.

Freedom modules will cost £50 and will only be available from AVP (0291 625439). They will be provided on floppy disc but because of the large amount of material involved, future plans are to use CD rom.

English update

EDUCATION software house LCL (0491 579345) have announced updated versions of their Micro English and Reading Writing Course programs for BBC Micros plus new Master Compact and Archimedes versions of Micro English.

The latest version of Micro English includes a new section of four programs on Oral Communication which is now part of the GCSE English course. It also includes a new section on English Grammar.

The first English GCSE course for BBC Micros to contain a program on Oral Communication, Micro English includes two books, a voice tape and 24 programs. There are eight programs on writing, 12 on reading, including comprehension tests and four on Oral Communication.

Designed for pupils from eight years-old to GCSE level and for foreign students learning English, Micro English still costs £24. The Compact and Archimedes versions will be launched in December.

Rewritten to bring it in line with the National Curriculum, LCL's new Reading Writing Course also includes 24 programs, two books and a voice tape to teach reading and writing. It now covers attainment targets 1 to 5 and includes a table to show which programs are suitable for which attainment targets.

MICRO ENGLISH

Colourful graphics and music are featured in the new package which covers the alphabet in both lower case and capital letters, writing and word recognition. Programs are also included to help students write amusing sentences, create poems and read books.

It is suitable for children from three years old, uses accepted teaching methods for dyslexics and is easily adapted to the needs of different pupils. The programs use three main teaching methods for reading – phonic, "look and say" and the multi-sensory phonetic and linguistic methods. Price, £24.

MORLEY E.L.E.C.T.R.

SPECIAL OFFER

Phone for details of our latest special offers.
We will match or better any advertised offer.

Archimedes

THE WORLDS MOST POWERFUL MICRO

A3000	£599
410/1	£1099
420/1	£1299
440/1	£1699
The Learning Curve	£699
Arc. Learning Curve	£1299
Jet Set Pack	£649

*** NEW PRODUCT ***

JET SET PACK

A3000 with "monitor quality" adaptor eliminates the need to purchase a dedicated monitor. Comes with four games - Interdictor, Superior Golf, Trivial Pursuit and Euclid - as well as the usual A3000 bundled software. £649

No Monitor Needed!
TV Modulator Included

ARCHIMEDES PERIPHERALS

Microvitec CUB3000	£189	Econet Upgrade	£49
Acorn Colour Monitor	£199	Acorn Rom Podule	£56
Philips 8833	£225	300 2 Slot Backplane	£37
Mono Monitor	£73	300 4 Slot Backplane	£59
Monitor Stand	£29	300/400 I/O Podule	£79
A3000 User Port & Midi	£49	300/400 Midi Podule	£65
Serial Upgrade	£19	300/400 3.5" Drive	£115

A3000 BBC ANALOGUE & USER PORT PODULE

Full specification BBC analogue and user port. The analogue port is accessible using ADVAL from BASIC5 with all BBC OSbyte calls supported.

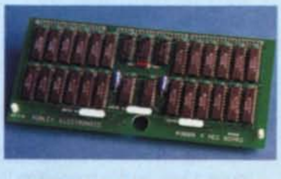
£69

Interface software written by Acorn for maximum compatibility with the BBC.

MEMORY EXPANSION

THE BEST VALUE MEMORY UPGRADES

Unlike most other cards, our upgradeable card can be upgraded from 1MB to 3MB at a later date for maximum flexibility.



- Fully compatible with all Acorn software.
- A must for all serious Archimedes owners.
- Make full use of powerful RISC-OS packages.

A3000 1 MB Expandable	£99
A3000 1 MB Non-Exp.	£69
A3000 3 MB Upgrade	£239
A3000 1 MB to 3 MB	£160
305 1/2 MB	£69
400 Series 1 MB	£69
400 Series 3 MB	£199

A3000 3.5" SECOND DRIVE

- Easy to install - simply plug in and run.
- High quality japanese drive.
- Includes full fitting kit and instructions

£125

A3000 5.25" SECOND DRIVE

Kit includes:
- 5.25" Teac 80 track drive
- Case
- Power supply
- Interface and leads

£169

LEADS & MISC. HARDWARE

Arch SCART Monitor Lead	£8	80 col Printer Stand	£15
Arch 9 Way Msync Lead	£8	132 col Printer Stand	£19
Arch Serial Lead	£8	A3000 Monitor Stand	£29
Arch Printer Lead	£6	Tilt & Swivel	
BBC Printer Lead	£6	Monitor Stand	£11
2 to 1 Printer switch	£20	Eprom Eraser	£18
3 to 1 Printer switch	£30	Eraser with Timer	£23
4 to 1 Printer switch	£36	5.25" Floppy Discs x10	£5
64k Printer Buffer	£115	3.5" Floppy Discs x10	£10
256k Printer Buffer	£199	27128 Blank Eproms	£4.20

TELETEXT

The Morley Teletext Adapter is now available for the Archimedes. Advanced specifications, include digital tuning, screen dumps etc. Connects via the external podule socket or our Analogue/User Port. £125

Existing users of our BBC Teletext Adapter can have the unit converted to an Archimedes version. £35

ST506 HARD DISK DRIVE UNIT

Faster and cheaper than 8 bit SCSI.

INTERFACE

ST506 Podule Kit	£149

A3000 DISK DRIVES
Including ST506 Podule, cased drive with power supply, cable & leads

20MB	£399
40MB	£499
55MB	£619

CALL FOR 300/400 PRICES

SCSI HARD DISK DRIVES

INTERFACES

A3000 SCSI Podule	£149
300/400 SCSI Podule	£169

A3000 DISK DRIVES
Including SCSI Podule, cased drive with power supply, cable & leads

20MB	£399
40MB	£549
60MB	£699

CALL FOR 300/400 PRICES

O.N.I.C.S. L.T.D

SOFTWARE

This is a small selection of the software that we can supply at competitive prices. Please call for any item you require.

ARCHIMEDES

Pipedream3	£119
1st Word +	£65
Minerva Home Accounts	£79
Acorn Desktop Pub	£121
Clares ProArtisan	£82
Clares Artisan 2	£49

M/B 8 BIT SOFTWARE

Design 7 +	£8.60
Desfax	£17.40
Masterfax	£26.00
Mastercopy	£11.20

MASTER ROM EXPANSION BOARD

THE ULTIMATE ADD-ON FOR ALL SERIOUS MASTER USERS

No more need to switch your computer off to insert a cartridge containing a required ROM.

With 2 cartridges and a ROM board, a staggering 32 ROM images installed and accessible at any time.

Allows an additional 8x16k and 4x32k ROMS to be installed in the Master and still leaves the cartridge slots free.

Master control ROM which includes a clever file transfer program allowing files to be transferred between DFS and ADFS formats or vice-versa. £40

MASTER SMART CARTRIDGE

Built-in features include:

- Freeze program at any point.
- Screen dump (any mode).
- Allows most protected software to be backed up including disc to tape and tape to disc. £30

CARE MASTER CARTRIDGES

Dual 2 x 16k	£10
Quad 4 x 16k	£14
Dual 2 x 32k	£12
32K NON VOLATILE RAM Cartridge (ideal for Spellmaster Dictionary)	£33

BBC / MASTER SCSI HARD DISC DRIVES

Don't be fooled by price, these units are among the fastest on the market.

Completely compatible with BBCs, B+s and Masters fitted with ADFS. Free utility disc incl: Format, Verify, Archive and Park.

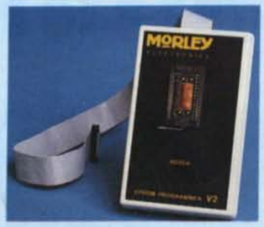
20meg	£370
30meg	£420
40meg	£500
Larger Drives	POA

TELETEXT

THE MORLEY TELETEXT ADAPTER

BBC/Master	£104
Compact	£120
RML Nimbus	£104
Archimedes	£125
Optional PSU	£9.50

BBC / MASTER EPROM PROGRAMMER



The fastest, best value programmer in the market.

Totally software controlled.

Programmes 27128/2764/27256 Eproms: 12 and 21 volt.

Includes full ROM management software with numerous features £30

Eprom utility disc. Put all your favourite routines into sideways ROM, both basic and machine code. £5.25

BBC / MASTER DISC DRIVES

All drives are 40/80 switchable with TEAC mechanisms

Single	£79
Dual	£169
Power supply	£40

MORLEY
E.L.E.C.T.R.O.N.I.C.S. L.T.D

Morley House
West Chirton
North Shields
Tyne & Wear
NE29 7TY

Tel (091) 257 6355
Fax (091) 257 6373

Shop hours:
9am to 5:30pm (Mon-Fri)
10am to 4pm (Sat)

Acorn

We are an Acorn dealer and service centre. If you would like to have a look at the A3000 or any other Acorn/Morley product please feel free to call in and discuss your requirements with our staff.

If there is anything you require which isn't advertised, please ring for a competitive quote.

How To Order....

BY POST: Enclose cheque made payable to MORLEY ELECTRONICS LTD.

BY PHONE: By quoting your ACCESS or VISA card number.

CARRIAGE: £1 on most orders. £3 on larger items. Hard Disks, Computers + Monitors £10 (carrier).

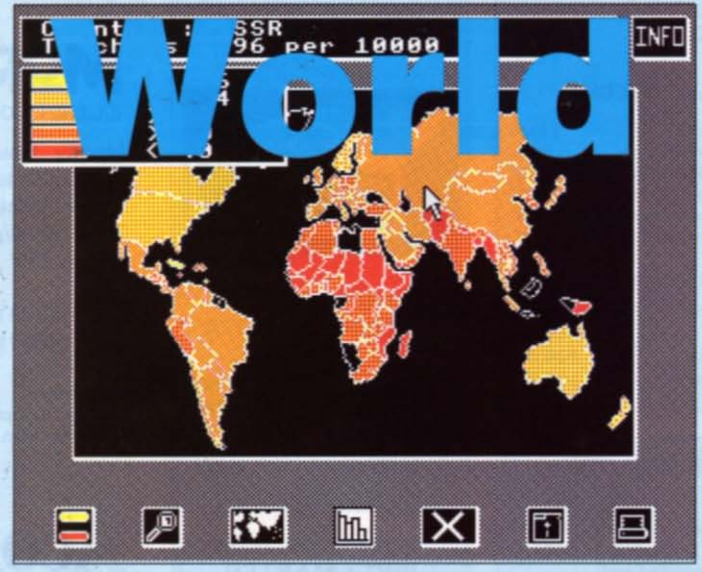
VAT: UK customers please add 15% to cost incl. carriage.

GOODS USUALLY DESPATCHED BY RETURN.

Government and Education orders welcome.

Acorn and Archimedes are trademarks of Acorn Computers Ltd.

World Map



HIGH quality educational software for secondary schools is nowhere near as common as that for younger age groups, and the packages that do exist are predominently maths and science oriented.

But this new package will be of interest to all teachers of geography and the more general areas of humanities and social studies in the secondary school and in some applications at the top of the primary school.

The basic screen presents a map of the world in what looks like a Hammer Equal Area projection – though this information is

Reading modern languages

Brushing up his French and German, Marshal Anderson takes heart from a new book

INTEGRATING computers into the modern language side of the curriculum isn't easy, but now there's a book to help you. Taking the form of a report on a project in five Hertfordshire schools where computers were introduced into the modern language curriculum, it starts by explaining what equipment and software was used, where it van be obtained, and irs cost.

Straight away you know you are reading about real school situations and leave behind the thought "*That's all very well, but what do I actually DO*" that so many more theoretical books generate.

The setting out of the report cannot be faulted. It states clearly the initial considerations, including access to machines and the use of trolleys. It then goes through the planning stage, considering the uses and misuses of the machine and the obstacles that have to be overcome.

All the programs used are described and evaluated in detail as are the more exotic uses of the machine like Audio Enhanced Computer Assisted Learning and remote access to the French Teletel database.

Sections like *Is it worth it?* get to grips with the reality of the situation, and the overall conclusions are enthusiastic but qualified. The section on wordprocessing with Pen Friend is particularly useful.

Appendices are provided on all aspects of using the machine from switching on to accessing Teletel, so teachers with no previous experience of computers can confidently tackle the activities described.

There are examples of students' work and the support materials the teachers produced, while the text is broken up with comments from students and staff. Overall the book is friendly and refreshingly self-critical – it's about real teachers in real classrooms with real students and real problems.

Summing up

This is just the sort of thing you need if you are going through the same process and want to avoid the pitfalls others have already discovered.

Product: Modern Languages and the Computer
Price: £3.00
Supplier: Advisory Unit for Microtechnology in Education, Endymion Road, Hatfield, Herts AL10 8AU.
Tel: 0707 265443

Modern Languages
and
The Computer

Study

Marshall Anderson travels from Aberdeen to Zanzibar with the help of this new release

Product: World Map Study
Price: £30.00
Supplier: ESM, Abbeygate House, East Road, Cambridge CB1 1DB.
Tel: 0223 65445

not provided – and a series of icons. Move a pointer around the map and select the country you are interested in by clicking with the spacebar.

You are dealing with a wimp-style environment the program will let you use an AMX mouse if you have the relevant chip installed. As an aside here I think it's worth having a little moan about the fact that the program does not have its own mouse driver. This would have made it more flexible in schools with machines spread about but few with the relevant chips.

Even without the mouse, the environment is very friendly. The pointer moves smoothly and accurately and can be speeded up by holding down Shift. Selecting small countries can be difficult, so there is an enlarge icon which will give you a map of just one continent – you switch back by selecting the World icon.

Once you have chosen your country you can see a selection of relevant statistics. These have been carefully chosen to provide a range of social and economic indicators that allow comparison of the state of one country with another.

To start with there is the expected area, population and GNP per capita information that is always needed.

Then comes military spending as a proportion of GNP and the proportion of the population employed in the military. To balance this we have the proportion of doctors and teachers. All these figures are per thousand, and already we can begin to compare and contrast the outlook and priorities of different nations.

Figures on urban population naturally indicate urbanisation, and child population will be some indication of human resources and future demography.

The health data is short and to the point. There are two figures for infant mortality – for 1960 and 1981which give a dynamic view of a country's ability to care for its population. To fill out the health picture there are figures on life expectancy and access to clean water.

Finally, separate male and female literacy figures give indications, not only of the extent of education, but of the society's attitude to gender. The care with which this data has been chosen is central to the package's success – it manages to cover the maximum of factors with the computer-imposed minimum of file space.

Choose the graph icon and you see what these figures mean in terms of different countries.

Information may be displayed in three forms. The first is to use shading on a map of the world or any given continent using two or five steps generating two or five levels of shading. You can use this for comparing countries from the point of view of one field – try plotting GNP per capita on the world map and you will straight away have the basis for lively discussion.

Bar charts can be selected in a similar way, using data for one continent or the world. But the use of scattergraphs really gets things going as your students get to grips with connections between GNP and life expectancy, or find out which poor countries are spending valuable resources on arms.

Each of the graph options will allow the computer to construct the scale or let you do it. The only niggle here is that scales must always start with zero, which restricts your ability to examine one part of a graph closely.

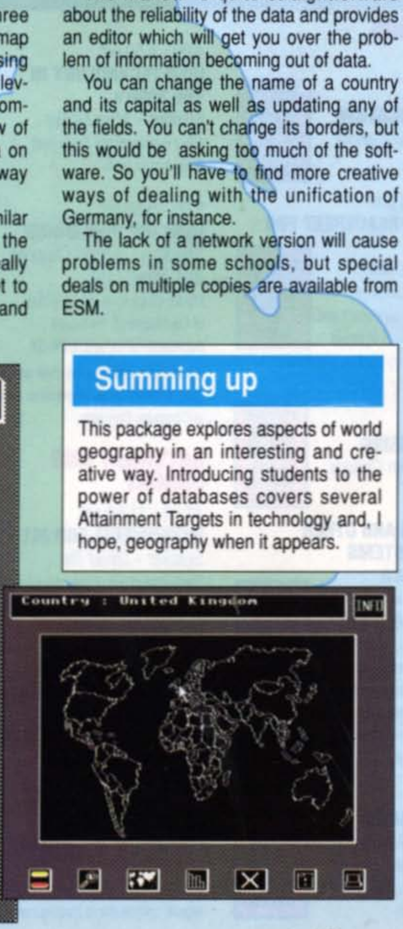
The manual is quite straightforward about the reliability of the data and provides an editor which will get you over the problem of information becoming out of data.

You can change the name of a country and its capital as well as updating any of the fields. You can't change its borders, but this would be asking too much of the software. So you'll have to find more creative ways of dealing with the unification of Germany, for instance.

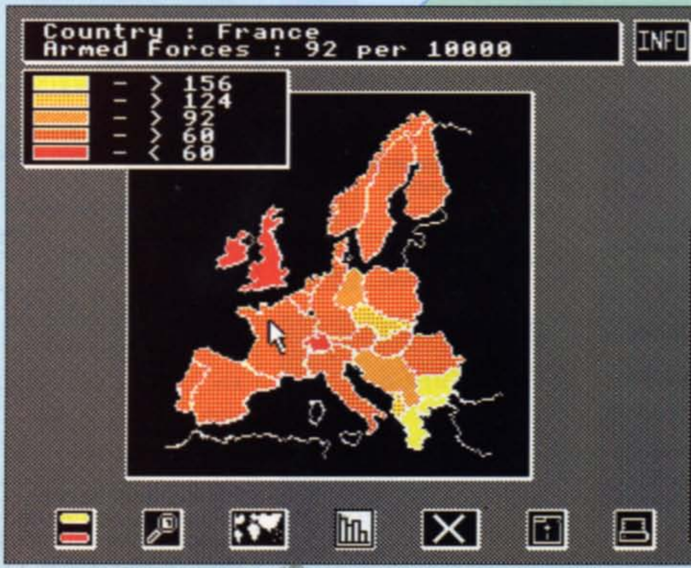
The lack of a network version will cause problems in some schools, but special deals on multiple copies are available from ESM.

Summing up

This package explores aspects of world geography in an interesting and creative way. Introducing students to the power of databases covers several Attainment Targets in technology and, I hope, geography when it appears.



Country : United Kingdom



Country : France
Armed Forces : 92 per 10000

Vouchers worth £235 redeemable at the Computer Shopper Show

New horizons

December 6-9
Wembley Conference Centre
London

8th to 9th December
Wembley
Conference
Centre
COMPUTER SHOPPER SHOW 90

A CONFERENCE SPONSORED BY ACORN
(in association with the Computer Shopper Show)

Acorn is to hold a major four day end-user conference running alongside this year's Computer Shopper Show.

It has been designed to bring computer users bang up to date with technology and what the company's renowned research and development team has achieved of late. Attendees will also be provided with a fascinating glimpse into the future of computing.

The conference will allow end-users to –

- **See all the latest Acorn innovations being exhaustively put through their paces.**
- **Hear from the experts who developed them, all acknowledged world experts in their fields.**
- **Gain an insight into the current projects on which Acorn is working to ensure it will remain in the vanguard of technology.**

No matter where your particular interest in computing lies, the conference will provide you with a unique opportunity to learn more.

For the timetable offers something for everyone. The conference itself is divided into two distinct seminar programmes - one running on the Thursday and Friday, the other on Saturday and Sunday.

Drop into a seminar of your choice – or attend them all – and you'll be given discount vouchers redeemable against purchases out on the exhibition floor.

There you will find up to 280 stands, including the massive Acorn Village, where the company will be flanked by all its leading third party suppliers.

Here then is YOUR chance to be not only entertained and informed but also to purchase computer Christmas presents at unbeatable prices. And it's all thanks to Acorn.

But don't leave it too late. Conference tickets are limited and will be allocated on a first come, first served basis.

Ensure your seat by completing and returning your application form TODAY.

Timetable of events

THURSDAY AND FRIDAY

11.00 - 11.50 am
CD ROM IN EDUCATION
Speaker - *A spokesman for Next Technology.*

VOUCHER WORTH £50 for a Next Technology CD Rom Drive

12 NOON - 12.50 pm
SCHEMA - A SPREADSHEET FOR THE FAMILY
Speaker - *David Clare.*

He has worked in the computer industry for more than nine years and is best known as the head of one of Acorn's longest standing third party software houses, Clares.

VOUCHER WORTH £30 for Schema

1.00 - 1.50 pm
IMAGE PROCESSING
Speaker - *Malcolm College.*

VOUCHER WORTH £40 for Wild Visions V9 Digitiser

2.00 - 2.50 pm
PC EMULATING AND OTHER OPERATING SYSTEMS
Speaker - *Ian Lynch.*

An expert on a variety of operating systems including IBM's PS2, MS dos, Unix and Risc OS, he is the curriculum development director for the City Technology Colleges Trust. In this role, he is responsible for supporting and developing curriculum innovation within colleges throughout the country

VOUCHER WORTH £30 for Acorn PC Emulator

3.00 - 3.50 pm
MUSIC-MIDI-MANIA
Speaker - *Mike Beecher.*

A graduate of the Royal College of Music, he is the managing director of ElectroMusic Research.

VOUCHER WORTH £30 for EMR Studio 24

4.00 - 4.50 pm
RISC TECHNOLOGY IN THE 1990's
Speaker - *Mike Muller*

A key memberof the Acorn Risc development team.

VOUCHER WORTH £25 for Programmers Ref. Manuals

5.00 - 5.50 pm
DESKTOP PUBLISHING
Speakers - *Martin Chappell and James Lynn.*

Martin Chappell is the Art Editor of Car Magazine, the largest publication of its type in the UK.

James Lynn is one of the chief designers and programmers on the Impression development team at Computer Concepts.

VOUCHER WORTH £30 for Impression 2

SATURDAY AND SUNDAY

11.00 - 11.50 am
HYPERMEDIA FOR ALL
Speaker - *David Tee.*

The author of two of the original programs on the first welcome tape for the BBC Micro, he is the man behind the Genesis project.

VOUCHER WORTH £20 for Genesis

12.00 noon - 12.50 pm
SCHEMA - A SPREADSHEET FOR THE FAMILY
(See details as for Thursday and Friday)

1.00 - 1.50 pm
PROGRAMMING MADE EASY WITH BASIC 5
(Including Dabs Compiler)
Speaker - *David Atherton.*

A co-founder of Dabs Press, he is well known as a regular contributor to leading computer titles.

VOUCHER WORTH £30 for a Dabs Press ABC Compiler

2.00 - 2.50 pm
PC EMULATING AND OTHER OPERATING SYSTEMS
(See details for Thursday and Friday)

3.00 - 3.50 pm
MUSIC-MIDI-MANIA
(See details for Thursday and Friday)

4.00 - 4.50 pm
FASTER COMPUTING - *all the expansion options for the Archimedes*
Speaker - *Alex Van Someren.*

The technical director of Aleph 1, producers of the first commercially available ARM 3 upgrade, he will demonstrate the full potential of the Archimedes and discuss future possible enhancements.

VOUCHER WORTH £50 for Arm 3 upgrade

5.00 - 5.50 pm
DESIGNING DOCUMENTS WITH THE HELP OF A COMPUTER
Speaker - *James Lynn.*

A leading light in desktop publishing technology, he is a chief designer and programmer at Computer Concepts.

VOUCHER WORTH £30 for Impression 2

Getting to the conference

Getting to Wembley Conference Centre is easy. All roads leading to the site are well signposted and the Centre is well served by buses and the tube (Jubilee & Metropolitan lines).

Conference registration

Complete the registration form below. Sessions are priced at £7.50 each on Thursday and Friday and £5 each on Saturday and Sunday. Or buy a "Rover ticket" and attend all sessions - £30 per ticket for Thursday or Friday - £15 per ticket for Saturday or Sunday.

Entrance to the Computer Shopper Show at the door is £5 for adults and £3.50 for under 16's, but for Acorn conference delegates only we are offering a reduced rate at £3 per adult and £2 per child. "Rover ticket" holders get in free!

Tick the boxes to indicate which sessions you will be attending:-

Please register me for the following sessions @ £7.50 each.

Thursday/Friday 6 & 7 December

☐ CD Rom in Education
☐ Schema - A spreadsheet for the family
☐ Image processing
☐ PC emulating
☐ Music-Midi-Mania
☐ Risc technology in the 90s
☐ Desktop Publishing

Please register me for the following sessions @ £5 each.

Saturday/Sunday 8 & 9 December

☐ Hypermedia for all
☐ Schema - A spreadsheet for the family
☐ Programming made easy with Basic 5
☐ PC emulating
☐ Music-Midi-Mania
☐ Faster computing
☐ Designing documents with the help of a computer

Please enrol me for ......sessions @ £7.50
Please enrol me for ......sessions @ £5.00
☐ Please send me a Rover ticket @ £30.00
  ☐ Thurs day ☐ Friday
☐ Please send me a Rover ticket @ £15.00
  ☐ Saturday ☐ Sunday
......Adult tickets @ £3 } only valid for Acorn
......Child tickets @ £3 } Conference delegates

I would like to pay by:
☐ cheque made payable to Blenheim Database

TOTAL.........

☐ Credit card ☐ Access ☐ Visa
Card number:

Exipry date
/

Name ....
Address ....
....
....

Please return completed order form to:
The Computer Shopper Show Ticket office,
Blenheim Database Exhibitions Ltd, PO Box 2,
Ellesmere Port, South Wirral L65 3EA.
Hotline 051 357 1736

MUA12

PRES POLICY

1. To provide the best possible service & assistance to users.
2. Supply Acorn based or Acorn compatible products & to enable upward compatibility wherever possible.
3. Provide tested products with special attention to quality of design, components & production.
4. "Only to cash cheques & credit card receipts when we know we can supply the goods ordered."

THE ADVANCED PLUS 3 MKII

The only fully compatible Electron disc upgrade running Acorns own filing system. Complete package of ADFS interface + 3.5" d/s drive + documentational welcome disc + free 3.5" Superior game disc.

£129 ex VAT £148.35 inc VAT

ADVANCED PLUS 1

The Advanced Plus 1, the main expansion for the Electron as designed by Acorn, gives Analogue Joystick Port, Parallel Centronics Printer Port + two cartridge ports – needed for disc upgrades such as AP3 & AP4 + free View OR Viewsheet (please state which title required)

£50 ex VAT £57.50 inc VAT

ADVANCED PLUS 6

A fully buffered 6 ROM expansion module for the Acorn +1 or API.

£33 ex VAT – £37.95 inc VAT

+ ADT for only £15.00 when purchasing AP6

Upgrade Service for the original Acorn Plus 1 to Advance Plus 1 & AP6

£40 ex VAT – £46.00 inc VAT (E-1)

ADVANCED DISC TOOLKIT

(01)/M/B/E/C **£30 ex VAT £34.50 inc VAT**

Any Acorn user including Master, BBC B+, Electron, DFS, 1770 DFS. ADFS, 2nd & co-processors A.C.P's BEST SELLING product containing over 30 commands inc:- powerful memory & disc editor, search memory/disc/basic, catalogue/unplug ROMS, load/run programs below page, automatic menu, file transfer (inc. locked cassette files), ADFS utils etc, etc ("it's superb", . . . Database Pubs. – "A top-class toolkit –I have no hesitation in recommending it . . . Acorn User Nov. 86) (16K EPROM & FULL MANUAL)

ADVANCED ROM ADAPTER 2

An Acorn approved cartridge containing a card with special 'zero' profile sockets.

£13.00 ex VAT – £14.95 inc VAT (M.E.-1)

ADVANCED BATTERY-BACKED RAM

A standard Acorn approved cartridge but 32K (2-16K) of sideways RAM inc Software Protect Facility

£39.00 ex VAT – £44.85 inc VAT (M.E.-1)

DISC INTERFACES

(Plus One required)

AP3 INTERFACE: As supplied with AP3 package

Price £52.00 ex VAT £59.80 inc VAT

AP4 INTERFACE: A fully compatible disc interface

Price £60.83 ex VAT £69.95 inc VAT

AP34 interface: Get the best of both filing systems

PRICE £69.55 ex VAT – £79.98 inc VAT (E.+1)

ADVANCED PLUS 2 ROM

We feel this is one of the best, low cost, additions we have produced for the Electron & +1 user, especially for Plus 3, AP3 & ABR users

£11.00 ex VAT – £12.65 inc VAT (E.+1)

ADVANCED PLUS 7

An internal battery-backed RAM upgrade for the Advanced Plus 6

£39.50 ex VAT – £45.42 inc VAT (M.B.E.+1)

SPECIAL XMAS OFFERS

	Ex VAT	Inc VAT
API + Single Joystick	**£60.83**	**£69.95**
Library Box of 10 x 3.5" discs	**£13.00**	**£14.95**

AGC Vols 1-6 **£11.49** each or 2 for **£20**

Delta 3B Single Joystick	**£13.00**	**£14.95**
Delta 3B Twin Joystick	**£19.09**	**£21.95**

ELECTRON GAMES COMPENDIUMS – (DISC)

Vol. 1

Invaders
Jet Power Jack
Killer Gorilla
Stock Car
Croaker
Felix in the Factory
Bandits at 3 o'clock
Bumble Bee

Vol. II

Felix and the Fruit Monsters
The Mine
Rubble Trouble
Swag
Cyberton Mission
Moonraider
Frenzy
Escape Moonbase Alpha

Vol. III

Danger UXB
Ghouls
Felix and the Evil Weevils
Adventure
Positron
Swoop
Chess
Galactic
Command

Vol. IV

Arcadians
Meteors
Snooker
Magic Mushrooms
Monsters
Qwak
Bug Blaster
Video
Revenge

Vol. V

Starship Command
Maze
Killer Gorilla 2
Frak
Cosmic Camouflage
Guardian
Planetoid
Constellation

Vol. VI

Strikers run
Zalaga
Fruit Machine
Invaders
World Geography
Alien Dropout
Centibug
Percy Penguin

3.5" ADFS £9.99 ex VAT each volume; £11.49 inc VAT
5.25" ADFS £8.99 ex VAT each volume; £10.34 inc VAT (E)
Vol. 1, 2 & 3 only

DISC DRIVES

	Ex VAT	+VAT
Cumana 5.25" dbl/sided 40/80 track, switchable, inc psu	**£113.00**	**£129.95**
PRES Special 3.5" double sided 80 track, inc psu	**£78.00**	**£89.70**

VIEW CARTRIDGE

The Acornsoft word processor for the Electron and Plus 1. Inc full documentation **£14.95**

VIEWSHEET CARTRIDGE

The Acornsoft spreadsheet for the Electron and Plus 1. Inc full documentation **£14.95**

VIEW & VIEWSHEET

Both products as above 'special price' **£19.95**
(E+1)

SPECIAL PACKAGE PRICES

	Ex VAT	Inc VAT
AP1+AP3	£165.00	£189.75
AP1+AP6	£77.00	£88.55
ABR+3.5" ADFS E00	£48.65	£55.95
ABR+5.25" ADFS E00	£46.95	£53.99
ABR+5.25" DFS (ADFS E00)	£51.00	£58.65
AP5+ Music 5000	£152.17	£175.00
AP7+3.5" ADFS E00	£49.52	£56.95
AP7+5.25" ADFS E00	£48.65	£55.95
AP7+5.25" DFS (ADFS E00)	£52.13	£59.95
AP4+CS400	£147.78	£169.95
AP1+AP4+CS400	£189.00	£217.35

ACCESSORIES

ELECTRON POWER SWITCH
£3.96 ex VAT; £4.55 inc VAT (E)

AP3 2nd DRIVE LEAD
£5.96 ex VAT; £6.85 inc VAT (E)

PLUS 3 2nd DRIVE ADAPTOR
£6.91 ex VAT; £7.95 inc VAT (E)

Panasonic KX-P1081 Printer Ribbon
£5.50 ex VAT; £6.32 inc VAT

ELECTRON ADVANCED USER GUIDE

Further reading and information for the Electron user	**£3.95**
ADFS Guide Manual	**£5.00**

(E)

ADVENTURE GAMES ON DISC

3.5" ADFS £6.95 ex VAT per Disc; £7.99 inc VAT per Disc (E)

PRINTER

Panasonic Matrix with NLQ

Including Ribbon Cable and Courier delivery

£139 ex VAT; £159.85 inc VAT (MBE+1)

MUSIC 5000

£99.00 ex VAT; £113.85 inc VAT
1 MHz Bus (E+1)

NEW PRODUCT

A new 1MHz Bus low cost Cartridge – £19.99 ex VAT; £22.99 + VAT (E+1)

DISCS

3.5" in plastic library box – ideal for Plus 3 users	**£19.95**
5.25" 10 dble/sided dble/dens	**£12.99**
5.25" Twin Gift Pack	**£1.49**
Games on disc (4 titles)	**£7.99 each title**

ADFS VERSION 1.1

Suitable for existing Plus 3 or A.P.4 users

£14.95 ex VAT; £17.19 inc VAT

ADFS E00

For Electron users with either Plus 3 or A.P.4 and 32k of S/W RAM i.e. ABR

3.5" ADFS (manual avail, sep.)
£14.95 ex VAT; £17.19 inc VAT

5.25" ADFS (manual avail, sep.) **£14.00 ex VAT £16.10 inc VAT**

5.25" DFS (2 Discs+ADFS manual) **£19.00 ex VAT; £21.85 INC VAT**

AP4 MOD

This converts an AP3 to an AP34 (ie. DFSEOO) supplied as a two chip set, full documentation and fitting instructions.

£21.74 ex VAT, £25.00 inc VAT

All items on this page are available mail order only. Prices include UK delivery & VAT (subject to availability). Please send or phone your order to

(in event of any query – please include your tel. no.)

P.R.E.S. LTD., PO. Box 319, LightWater, Surrey, GU18 5PW. Tel: 0276 72046 (24 hr). Fax: 0276 51427

Product Qty @ Total

Name ....
Address ....
....
Postcode ....
Tel: .... I enclose payment for £ ....
Credit Card No: .... Exp date .... (Ref MU12)

PINEAPPLE SOFTWARE

The Pineapple Software Real Time Colour Video Digitiser

What is a Real Time Video Digitiser? There are quite a few different 'Digitisers' available for the Archimedes but very few can accurately claim to fit the above description. The requirements are that it must be able to 'grab' a single field of video information from a colour moving source, such as a video recorder, TV, or video camera, and then process the image and display it on the computer screen.

The Pineapple Digitiser does just this, – and at a price which is less than some Digitisers which can only handle static images.

HARDWARE

The hardware consists of a double width podule which fits inside a 300 or 400 series Archimedes, and comprises a PAL colour decoder, 256K memory and various control and interface circuitry. The PAL decoder converts the input signal from your TV or video recorder into separate red, green and blue signals. These are then converted into digital form and stored in the 256K ram in a format giving 512 pixels across the picture and 256 rows vertically. The video signal in the ram is constantly changing at the same rate as the incoming video picture until the podule receives a signal from the computer to 'freeze'. At this point the last picture in the ram is frozen and can be transfered to the computer screen in many different ways depending on which software commands are issued.

SOFTWARE

The software to drive the podule is supplied on disc in the form of a relocatable module. This provides a host of additional '*' commands and SWI's which can be used even by inexperienced programmers to produce very impressive displays of live pictures or ones previously saved on disc. For non-programmers, ready written programs are provided to explore all the features of the Digitiser and produce 'Sprite' images which can be used in many other applications and 'Art' packages. The software is very easy to use and scaling routines are provided which allow you to manipulate the grabbed image by selecting any part of the picture (using a box drawn on screen controlled by the mouse) and placing it on any area of the screen, again using a box to select the position and size. This enables multi-picture images to be produced very rapidly using either live pictures or ones you have previously saved on disc. The 80 page handbook provides full details of how to implement the commands even for the inexperienced programmer.

EDUCATION

The Digitiser has many uses in education. The software commands can show many of the effects typical of the digital storage of TV pictures which can help to explain the way in which TV works. It can also be used to produce powerful audio-visual displays tailored to your own requirements from images captured using video cameras etc. For younger children, programs can be created to help learning by giving high quality visual images of animals, birds, trees etc, built into a 'quiz' format. The possibilities here are endless.

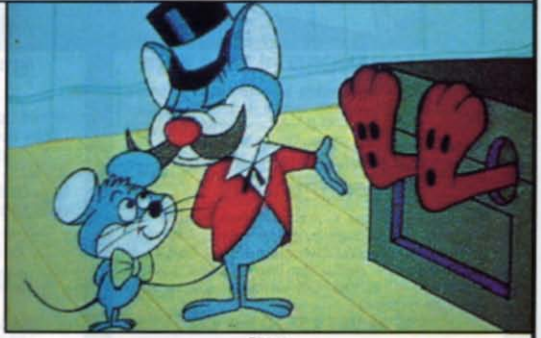
FUN & GAMES

As well as showing off to all your friends who don't have an Archimedes, what a great computer it is, you can use the Digitiser to produce images for all sorts of games and visual demonstrations. Games such as 'Guess the Celebrity' or 'Guess the Advert' can be produced by even inexperienced programmers, simply by 'grabbing' all the necessary images from TV and saving to disc.

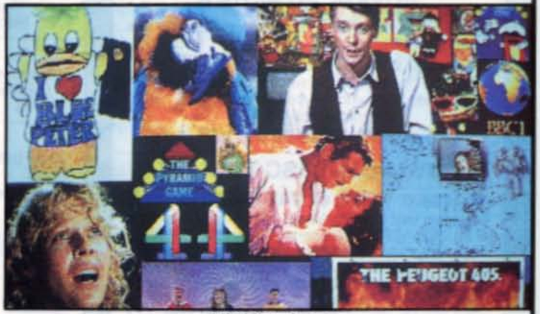
SPECIFICATION

Video Inputs	Pal coded video, .75 Volts – 2·5 Volts pk to pk R, G, B & sync input All inputs may be terminated by internal DIP switches.
Resolution	512 x 256 pixels
Storage system	Standard version 4 bits Red, 4 bits Green, 4 bits Blue – 192KRam Extended version 5 bits Red, 6 bits Green, 5 bits Blue – 256K Ram
Picture Area	The Digitiser harware allows the full screen area normally viewed to be stored in the podule ram. Horizontal shift, Vertical shift and width can be adjusted internally if required.
PAL Decoder	The PAL decoder provides manual control of Brightness, Contrast and Saturation, combined with full auto saturation control.

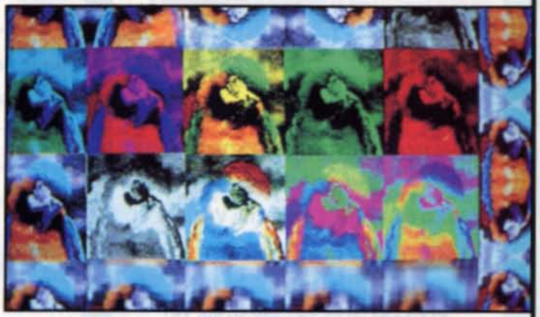
STOP PRESS! STOP PRESS! STOP PRESS! STOP PRESS! STOP PRESS! STOP PRESS!
Many new software applications are now supplied with the Digitiser including an excellent new icon based front end providing easy access to all the existing Digitiser features plus many new ones!



Cartoon



A Multi Picture Image



Some Digitiser Effects

NEW! NEW! NEW! NEW! NEW! PAL COLOUR CODER

A new hardware product now available from Pineapple is a high quality colour coder unit. This unit produces a full coded video signal from the Archimedes computer which enables you to feed the output of the computer into a video recorder or second colour TV monitor.

FEATURES:

1. External to computer - no podule slots required
2. Sync regeneration to provide correct broad pulse and equalising pulse wfm
3. Switch selectable to 624 or 625 line operation - for interlaced or non-interlaced screen modes
4. Plugs into RGB computer socket and provides buffered output to feed Archimedes monitior + coded signal output
5. Adaptable for use with other computers or RGB and Sync signal sources.

PRICE £69.00 + VAT. P&P FREE

-'Pineapple has produced one of the 'ultimate' Computer Video Digitisers'-
-'The Pineapple Colour Digitiser looks to be one of the most professional products yet to be seen on the Archimedes'-

Acorn User - April 90

Digitiser Prices

Standard	**£285.00**
Extended	**£315.00**
A3000 Adapter Box	**£65.00**

POSTAGE AND PACKING FREE

NEW LOW PRICES! **BBC PCB Designer** **NEW LOW PRICES!**

This ever popular ROM based PCB designer is suitable for all BBC Micros.
It's fast high-density 1:1 scale print routine allows prototype boards to be made directly from a printout, and a 2:1 scale print may also be used to produce professional quality boards. A second Eprom is optionally available to add a powerful auto-track routing facility to the program. This utilises a 'rats-nest' imput routine and allows any component to be 'picked-up' and moved around the board without having to re-specify component interconnection.

The full auto-route facilities are available even on a standard unexpanded Model B.
'PCB Autoroute is remarkable. No similar software comes near the price.'

Acorn User- Aug 88

PRICES

Manual track routing	£55.00
Auto track routing	£85.00
Plotter Driver	£35.00

P&P FREE

STILL AVAILABLE AT NEW DISCOUNTED PRICE!
DIAGRAM II £25.00!

ADFS Utilities Rom

ADU is an invaluable utility for all ADFS users. It adds over 22 new * commands to the ADFS filing system as well as providing an extensive menu facility with over 35 sub commands covering such areas as repeated disc compaction, saving and loading Rom images, auto booting of files, and many more. Transferring of files from DFS to ADFS is also made very easy

ADU .... **£29.00** **P&P FREE**

Marconi Tracker Balls

RB2/101 Bare for BBC	£45.00
RB2/ 101+ With software	£50.00
RB2/115 Archimedes	£45.00
RB2/107 Atari ST	£45.00
RB2/109 Amiga	£45.00
RB2/110 Nimbus	£45.00
Mousetrak adapter to enable 101 and 101+ to work with Mouse software	£8.00
Postage and packing on Tracker Balls	£1.75

BARCLAYCARD VISA

Please add 15% VAT to all prices

39 Brownlea Gardens, Seven Kings, Ilford, Essex IG3 9NL
Tel: 081-599 1476. Fax: 081-598 2343

Access

PRES

Tel: 0276 72046
Fax: 0276 51427

IN THE FOREFRONT OF A3000 UPGRADES

DEALER
ENQUIRIES
WELCOME

PRES's range of add-ons offers tremendous advantages. The system can grow with your pocket, it offers security nd strength but most importantly it offers choice." (AU Feb.90)

he starting point is the monitor plinth, probably (we feel definitely) the best on the market @ only £24.95 (plus VAT). rom there ... System Housing, Hard Disc Upgrade, Additional 3½" Disc Drive, Additional 5¼" Disc Drive, Podule ase, Dedicated A3000 Disc Buffer, 1770 DFS for BBC Emulator & DFS Filer for Desktop, plus more to come! (the ast three products can be added independently of the other items)

ontact your local dealer or call PRES direct on 0276 72046 for advice on upgrading your A3000.
e have built our reputation on honest dealing on quality products with thousands of satisfied customers.

A3K1

Probably the best ***monitor plinth*** available for the A3000 & the basis of a modular system.

A3K2

When you are ready to expand the A3000 this ***system housing*** is added, allowing upto 2 floppy drives and a hard drive to be added.

A3K3

If you are adding an expansion card (podule) to an A3000, such as a hard disc card, then you will need this ***podule case*** to connect & protect the card.

A3K6

If extra floppy drives are to be connected then you will require a ***disc buffer.*** This one supports upto 3 additional drives and incorporates software control for physical to logical drive mapping & 40/80 stepping which could prove essential when using discs in 65Host or PC emulator. A key feature is the built in expansion for further cards to be added internally; also see A3K12. NB some cheaper products may only provide a connection for an additional drive without buffering.

A3K7

A 20 mb hard disc drive ready to fit in A3K2, including the hard disc card and all cabling. We are not aware of any other hard disc upgrade that is treated as an internal upgrade (consult your Acorn dealer or call PRES for details)

A3K8

31/2" disc drive & mounting brackets for A3K2

A3K9

53/4" disc drive & mounting brackets for A3K2

A3K12

A ROM & disc upgrade for A3K6 provides –
1) a desktop ***DFS filer*** that allows DFS files to be dragged to ADFS viewers or straight into applications such as Edit or Pipedream.
2) BBC ***1770 DFS*** for use in ***65 Host.*** Automatic Icon and loader which can allow BBC DFS discs to have **<SHIFT BREAK>** operation.
"effectively turns your A3000 into a model B" Acorn User Sept '90

GET THE MOST FROM YOUR ARCHIMEDES IN YOUR BUSINESS WITH A FULLY INTEGRATED ACCOUNTS PACKAGE

(Retail, wholesale, manufacturing distribution, school project...) **MICRO TRADER** offers integrated sales, purchase & nominal ledgers with the option of integrated stock control.

Facilities include invoice & statement printing with a capacity of 1000 accounts & 5000 transactions a month. The system caters for up to 6 bank accounts with full VAT facilities & journal postings.
Comprehensive reporting for individual accounts, Audit trail, Trial Balance, P&L Account and Balance Sheet.

(£199+ VAT includes 1 month telephone support extendable option)

Call for fact sheet and more information.

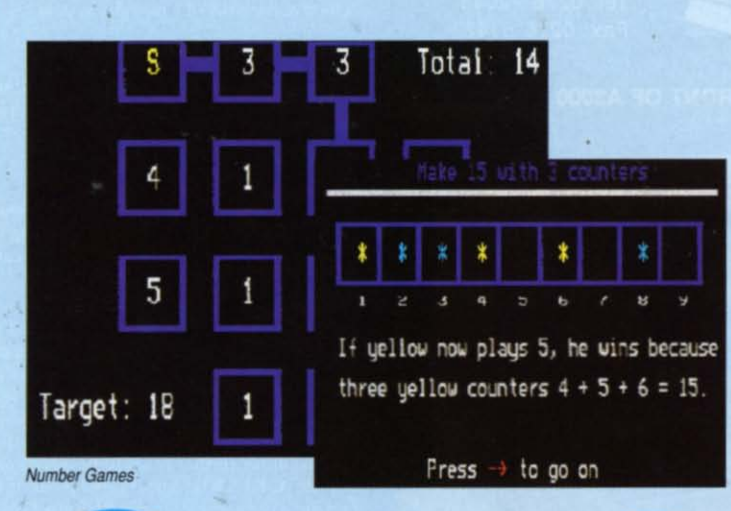
STOP PRESS

NEW Archimedes upgrades

A3000 RAM upgrades..... 2MB & 4MB, high quality, multi layer boards, 100% Acorn compatible, only 8 chips, low power consumption, lower operating temperature... £99+vat

Product re-launch... the PRES-AVIE A310 RAM board turns your machine into either an A320 or A340 based on the best reviewed RAM upgrade for the A310. Can be upgraded from 2 to 3MB. Supplied complete with MEMC1A and fitted with large ROM sockets for future upgrade compatibility. Compatible with Aleph 1 ARM 3. Specialist fitting required, fitting service available. Contact your specialist dealer or call **PRES** direct.

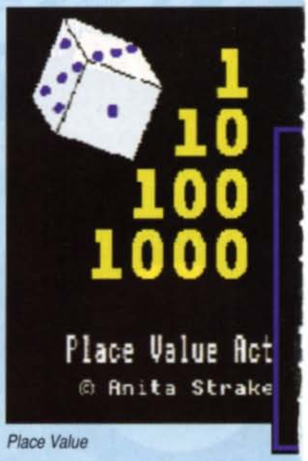
1 to 2 MB upgrade £346.96+vat



If yellow now plays 5, he wins because three yellow counters 4 + 5 + 6 = 15.

Press → to go on

Number Games



Place Value

One, two,

Product: Getting Ready, Place Value and Number Games
Price: £18.50 each
Supplier: ESM, Abbeygate House, East Road, Cambridge CB1 1DB.
Price: 0223 65445

NUMBER in the National Curriculum is well catered for, but there is always room for more. So here's a collection of Anita Straker's maths programs published by ESM in three separate packs: Getting Ready for Maths, Place Value Activities and Number Games.

Described by ESM as "a new series of maths programs.....designed to sit in with the needs of the Maths National Curriculum" most, if not all, were written some years ago. Although occasionally updated, they will still be familiar to some teachers and children.

Their age is not a problem – the programs are well thought out, mathematically sound, and offer experiences at different levels within the National Curriculum. Their age is apparent in the extensive use of simple graphics and jingles.

There is some advantage in keeping things simple. All of the menus and key presses are consistent and this helps pupils to learn how to use the programs quickly and easily, but simplicity in graphics often detracts from their value.

I am not too sure that today's pupils will view them in quite the same way, especially if they have experience of some of Sherston Software's usually dramatic offerings.

Getting Ready for Maths explores some basic concepts. The six programs include games and puzzles based on matching, sequencing, investigating patterns and recognising numerals.

They are a useful addition to the Reception and Year 1 teacher's collection, and children working in groups of two or three will find them interesting and enjoyable.

Cubes is a simple program concerned with patterns. Children are encouraged to look carefully at eight cubes of various colours before using the spacebar and Return to match the sequence on a line below. At more difficult levels the cubes are presented in piles of two or three.

Beads 1 uses the same keys and methods of working as Cubes, but this time shapes – triangles, diamonds, hexagons and circles – as well as colours must be matched. Again, there are differing levels of difficulty within the program.

Instead of asking for a pattern to be copied, **Beads 2** asks the children to continue one. It is fairly simple at the easiest of the three levels, but at the hardest the pattern can prove quite difficult. Careful working is essential.

Interesting and valuable work based on this program can be done away from the computer. Children using beads and card can simply mimic the program, but to extend their experiences, seeds, for example, may be glued on to paper to continue patterns set by the children themselves.

Some of the patterns I have seen when working with Year 1 classes are testimony to the way in which the computer and uncomplicated programs such as Beads 2 can make some children to work at a much higher level than may have been anticipated.

Matching and **Number Snap** are based on matching. In the first, which has two levels of difficulty, the child is presented with a number of shapes at the top of the screen. Pressing the spacebar puts a matching number of shapes at the bottom – at the easier level each shape has a guide line at the bottom.

The second of the two displays a number of simple pictures with three large numbers. The spacebar and Return key allow the child to choose the appropriate numeral to match the number of pictures. Unfortunately, the pictures are very simple and the motivation is not high, despite Podd making a guest appearance.

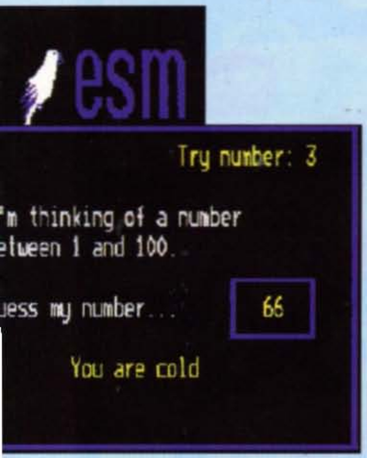
For children who have a grasp of numbers to nine, **Line Up** lets two children practise their knowledge. A 6x4 grid is shown onscreen and the trick is to be the first to fill a column of four.

Between one and nine spots are shown on what is loosely described as a rolling die. The number displayed can be used as it is or as the result of adding two numbers, for example, a seven is rolled and is the result of three and four. By choosing the number or pair carefully players can fill the numbered squares on the grid to get a completed column.

Place Value, the second pack, contains seven games and puzzles at levels two, three and four of the National Curriculum. Six of the programs support the concept of place value, but the seventh, **Shape Hunt**, involves the search for a square and is described as "a little light relief".

The first four programs are variations on a theme and use the rolling die again. Depending on the game, points are awarded if the larger numbers form number sentences or sums and include the less than and greater than signs.

The programs achieve their goal but the instructions and scoring are difficult for young children to understand even if they

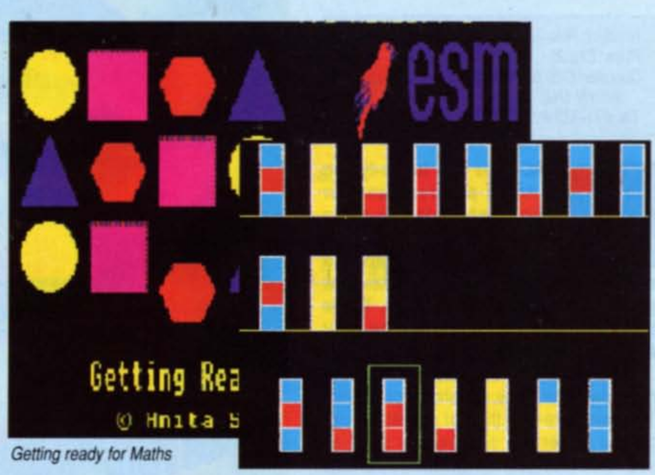


Try number: 3

'm thinking of a number
etween 1 and 100.

uess my number... 66

You are cold



Getting ready for Maths

three...

Frank Jukes assesses ESM's relaunch of some classics

have a good grasp of place value. Using the programs with an adult is best and probability is an unexpected bonus!

The concept of probability was neglected by many published maths schemes until recently, when the National Curriculum gave it the status it deserves.

A child with an understanding of probability will have an advantage when deciding where to place the numbers shown on the die, and it would be possible to use the programs to reinforce the concept with those who are relatively new to it.

Find Me is a guess the number game. In all the three versions the computer selects a number between 0 and 100. The differences between the games lie in the clues which the computer gives. In the simplest game clues are of the too big or too small variety while the hardest asks for you to decide before you start, how hot 'hot' should be and when 'cold' should become "freezing'.

Another game with three levels of difficulty is **Counting Words**. A number is displayed in words and you must enter the equivalent in figures. Different levels offer larger numbers.

If mistakes are made you are taken through the process digit by digit.

The object of **Shape Hunt** is to find a large blue square within a grid by colouring it in square by square. Described as a diversion, it is just that, but a useful one for all that. If a child really understands what it is that makes a square a square then success will be quick. If that understanding is not there using the program may help it develop.

Finally **Number Games** is pitched higher. Aimed at Maths Attainment Targets 1, 3 and 5 at levels between 3 and 5, it contains eight programs.

Chains is a puzzle which asks you to add numbers together in a chain to match a given target number. Producing some interesting problems it isn't always possible to match the target number.

Counters, Make 37 and **Make 57** are strategy games for two players. The objective is to reach a given total by selecting numbers from an on-screen grid. The games are quite simple and would be useful for providing addition practice, but I'm not so sure that time devoted to these programs would be well spent.

Spot the Pattern is better. A random series of seven numbers between 0 and 100 is displayed with all but two replaced by stars. You must find the other five, one point deducted from a starting score of 20 for every wrong guess. Three levels of difficulty cater for a wide range of ability.

For children who understand such terms as square, cube, triangle, more than and less than when applied to numbers **Ask Me** provides an alternative approach to the **Find Me** games of the **Place Value** pack.

Similarly simple, it provides a lot of motivation to look for a quick and elegant solution using the attributes of the different terms. Children enjoy playing it.

Play Train is excellent, but like others in the series it suffers from poor graphics. The problem is to fill a train's carriages with a given number of passengers. Passengers only come in two groups, so trial and error is the way to solve this one. A strategy can be developed and applied though.

Summing up

Most of the programs in the three packages are repetitive, but anyone tempted to dismiss them as "drill and practice" would be wrong. With a little imagination, and advice from the simple and clear 10 page manual, they can be used to provide useful mathematical challenges.

Young children can practise new skills and apply them in new situations in a fun and non-threatening environment. They can also experience situations where there are opportunities for problem solving and logical thinking, as well as strategic planning which may quickly be tested and modified if it is not successful.

Taken as a whole, the three packs are a useful and mathematically sound resource, but the programs are showing their age and are not cheap.

Finally, I am concerned that ESM should attempt to link what is essentially a collection of existing materials to the National Curriculum by simply including a reference to it in the title and by brief references to attainment targets in the manual.

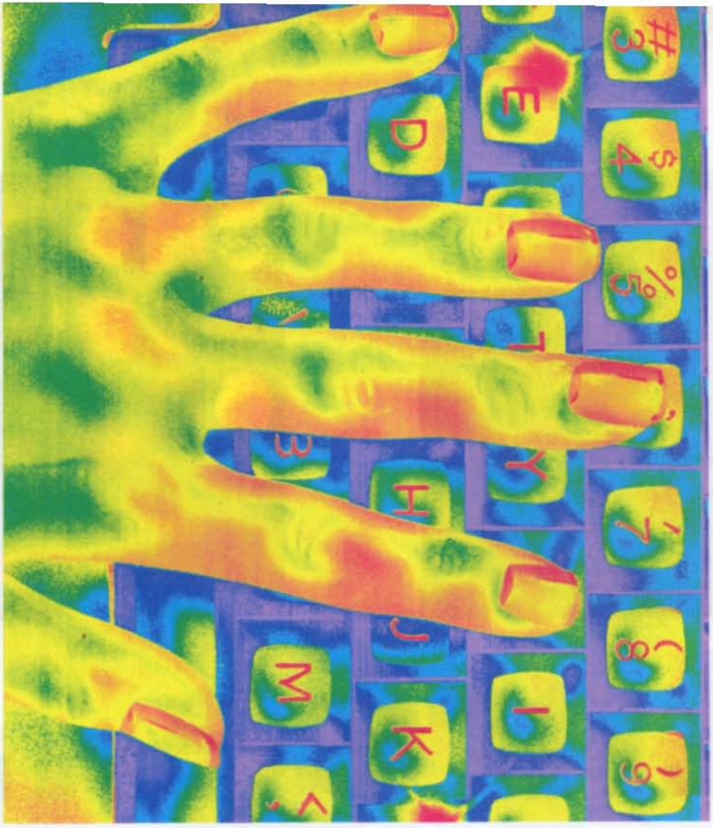
Like many other recently published materials, the programs were not specially written for the National Curriculum and any links are simply implied. Unfortunately, as the practice spreads it brings no credit to anyone, and is in a sense misleading.

The last game is **Sliders**. It is suggested as one for two teams, and I would recommend teams of only two children. There is simply not enough to do to involve more, especially when it is possible for the second player or team to win every time once a relatively simple trick has been learned.

Qwerty mad

Rog Frost tries out his typing skills

Product: Risc Type
Price: £19.95
Supplier: CIS. 8 Herbrand Street, London WC1N 1HZ.
Tel: 071-833 4023



RISC Type is a touch-typing tutorial program, and for those who wish to learn this skill, it's extremely useful to have a kindly computer which recognises errors and can give you a speed typing rate as well. These tasks can now be carried out on your Archimedes, courtesy of this software.

The basic idea is simple. A small section of text – just one line – is shown on screen. You have to re-type the text so that it is displayed under the original. As soon as you've finished you are given a percentage rating for accuracy, told how many words you can type each minute and receive a simple message.

The words per minute rating is somewhat misleading. I have achieved speeds of over 220 words per minute by the simple trick of making each and every word just one letter long. A better measure would have been to have worked on average words of five letters. You are, in fact, bound to end with no mistakes on the screen. This is because the program will not display the wrong letters that you type.

You'll know, though, when you do err since the computer offers you a low pitched raspberry noise rather than the bell which signals success.

If you hear any of these fruity asides you have to finish the task and try it again. And you keep repeating the same line until you get it right, at which point you are offered the next line of the lesson to work on.

Options allow any feature to be turned on or off – including the sound effects – and an extra metronome sound can be added to help inculcate a good typing rhythm. All of the messages that tell you how good or bad you are can be removed.

A printer can be selected and the printout shows precisely what you typed, including mistakes, along with the correct line of text. A large on-screen display of the keyboard can be removed if you don't require it. All the options can be saved to disc.

Complete with a set of lessons which start with the home keys and take you right through the keyboard, RiscType's ideas are sound and I am assured by a typing teacher that everything is correct.

Everything, that is, apart from spelling mistakes and errors in grammar. I feel cheated when I spell things correctly only to get a raspberry. This problem of lesson accuracy permeates the whole package, which includes ideas for learning poems or French vocabulary.

This should not be a major worry since lessons are only !Edit files, so it's easy to create your own or correct the ones there.

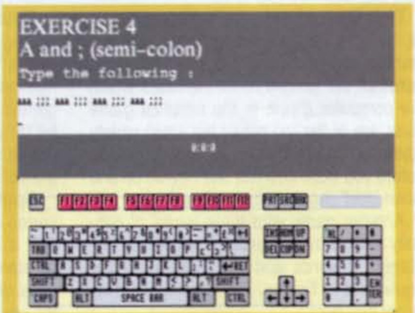
If you follow the instructions in the handbook, though, your new lessons won't work. This is because the required layout of the lesson is not described properly in the book – I had to study the structure of one already on the disc.

It's a pity to have to make these fairly basic criticisms. After all, it would have taken very little effort for the writers or publishers to have dealt with these problems.

Perhaps they'll be put right on the all-action version two which is promised soon. I hope so because they spoil what is otherwise a very good program.

Summing up

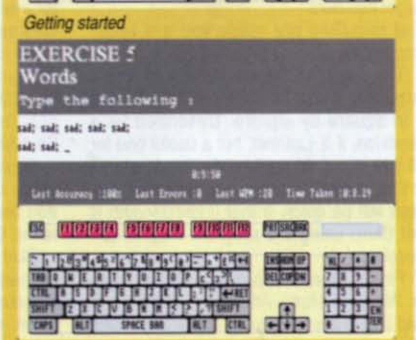
RiscType is a nice package to use, and is a good way to improve your keyboard skills. However its use will be limited until CIS sort out some of the problems of accuracy which exist.



EXERCISE 4
A and ; (semi-colon)
Type the following :

```
aaa ;;; aaa ;;; aaa ;;; aaa ;;;
```

Getting started



EXERCISE 5
Words
Type the following :

```
sad; sad; sad; sad; sad;
sad; sad; _
```

```
0:5:58
Last Accuracy :100%   Last Errors :0   Last WPM :28   Time Taken :0:0.29
```

Further along in the lesson

Presenting PROTEXT 5.0

Five years to the month after Protext version 1 was launched Arnor are pleased to present version 5, an enormous leap forward in both ease of use and performance.

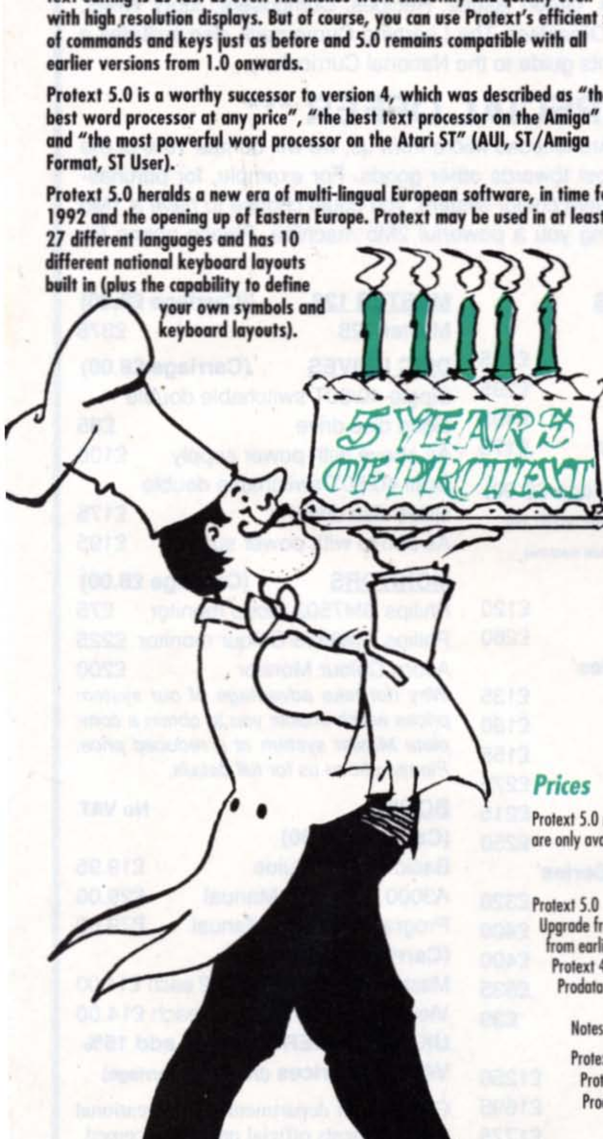
Protext 5.0 introduces a completely integrated system of pull down menus and dialogue boxes. The menus are among the many operations that may now be carried out with either the mouse or the keyboard. Protext really does give you the best of both worlds..

Protext 5.0 handles printer fonts flexibly and accurately. You can make full use of any number of proportional printer fonts, mix them freely within any line, centre them in headers, use automatically formatted footnotes. And Protext correctly formats your text as you type it, no matter how many font changes you use, showing you line and page breaks exactly as they will be printed.

Protext 5.0 is still the fastest word processor around. Even though we have made all these major improvements we have taken great care to ensure that text editing is as fast as ever. The menus work smoothly and quickly even with high resolution displays. But of course, you can use Protext's efficient set of commands and keys just as before and 5.0 remains compatible with all earlier versions from 1.0 onwards.

Protext 5.0 is a worthy successor to version 4, which was described as "the best word processor at any price", "the best text processor on the Amiga" and "the most powerful word processor on the Atari ST" (AUI, ST/Amiga Format, ST User).

Protext 5.0 heralds a new era of multi-lingual European software, in time for 1992 and the opening up of Eastern Europe. Protext may be used in at least 27 different languages and has 10 different national keyboard layouts built in (plus the capability to define your own symbols and keyboard layouts).



The Features

☆ **New fast & easy to use pull down menu system** with dialogue boxes and alerts; file selector; mouse dragging to set blocks. Menus complement existing commands and keyboard shortcuts, do not replace them. Menus may be used with mouse or keyboard. Amiga version follows Intuition guidelines.

☆ **Enhanced printing capabilities** supports multiple proportional fonts; mixing of different font sizes on the same line; proportional formatting whilst editing; side margin, headers and footers independent of main text font. Tabs, decimal tabs and centre tabs. Extensive range of printer drivers supplied.

☆ **Multiple file editing** - up to 36 files may be open; split screen editing.

☆ **Graphics mode support** on PC allows use in virtually any text or graphics mode including 132 column or 75 line VGA modes; user defined characters and on-screen bold, italics and underlining now on all versions; use of 13 different accents on any character.

☆ **Language support includes** Albanian, Basque, Czech, Danish, Dutch, English, Esperanto, Estonian, Flemish, Finnish, French, German, Hungarian, Irish, Italian, Latin, Lithuanian, Norwegian, Polish, Portuguese, Rumanian, Serbocroatian, Slovak, Spanish, Slovene, Swedish, Welsh. (Note: some printers do not support all languages).

☆ **Index and contents** generation. Indexer takes marked words or phrases; contents entries automatically taken from titles wrapped in control codes; many options for style of contents output.

☆ **Spelling checker** features completely new 110,000+ word Collins dictionary with very fast phonetic lookup. Anagrams and find word pattern. Foreign language dictionaries (German, Swedish available now, others to follow).

☆ **Many other enhancements** including multi-line footnotes and endnotes; automatic timed save; add column or row of figures; indent tabs; find word at cursor; 40 column mode support; sentence operations; inter- paragraph space; much improved expression evaluator; self incrementing variables; Roman numerals; newspaper-style column printing; file sorting utility with special options for names and addresses; revised manual plus new tutorial guide.

☆ **And don't forget Protext still includes** background printing; box manipulation; macro recording; exec files; headers and footers; find and replace; mail merging; undelete; file conversion utility; configuration program; auto reformatting; on screen help; time and date; typewriter mode; line drawing; disc utilities.

Prices

Protext 5.0 may be purchased from any good computer shop or directly from Arnor. Upgrades from earlier versions are only available from Arnor and the original discs should be returned with your order.

	PC	Amiga	ST/TT	Archimedes
Protext 5.0	£149.95	£149.95	£149.95	£149.95
Upgrade from v4.2	£60	£60	£60	N/A
from earlier versions	£75	£75	£75	N/A
Protext 4.2	£99.95	£99.95	£99.95	N/A
Prodata 1.1	£79.95	£79.95	£79.95	due 1991 Q1

Notes:

Protext 5.0 requires at least 640K of memory on all machines
Protext 4.2 requires at least 512K of memory on all machines
Prodata requires 1MB of memory on the Amiga

ARNOR

Arnor Ltd (MU), 611 Lincoln Road, Peterborough, PE1 3HA. Tel: 0733 68909 (24 hr), Fax: 0733 67299

B&S COMPUTING (Nottm) Ltd.

258 Derby Road, Bramcote, Nottingham NG9 3JN
Telephone: (0602) 491202 Fax: (0602) 491322

***** ACORN APPROVED AND PREMIER LEAGUE DEALERS *** STAR REGISTERED BUSINESS DEALERS *****

ARCHIMEDES COMPUTERS

(Carriage free)

	Base	Colour	Multi-Sync*
A3000	£599	£799	£999
410/1	£1099	£1299	£1499
420/1	£1299	£1499	£1699
440/1	£1699	£1899	£2099

* The Multi Sync Monitor is the Taxan 775

ARCHIMEDES EXPANSION

(Carriage £1.50)

1Mb RAM Upgrade (A3000)	£95
1Mb RAM Upgrade (400/1 series)	£75
A3000 Serial Port Upgrade	£19
A3000 User/Midi Port Upgrade	£49
A3000 Monitor Plinth	£29

ARCHIMEDES SOFTWARE

(Carriage £1.50)

1st Word Plus	£69
System Delta Plus	£59
SigmaSheet, Gamma Plot	each £55
Render Bender	£59
Artisan II	£50
Atelier	£85
Auto Sketch	£69
ISO Pascal, Fortran 77	each £90
Logistix	£90
Pro-Artisan	£85
PC Emulator	£85
(Carriage £2.50)	
Acorn Desk Top Publisher	£125
Ansi C (Release 3)	£125
Lisp, Assembler, Prolog X	each £150
Pipe Dream (Version 3)	£130
Impression 2	£150
Impression Junior	£80

ARCHIMEDES GAMES

(Carriage £1.50)

Orion, Missile Control	each £12
Freddys Folly, Alerion	each £12
Jet Fighter, Hover Bod	each £12
Caverns, Thunder Monk	each £12
Word Up-Word Down	£15
Zarch, Repton 3	each £15
Ibix The Viking	£15
Pacmania, Terramex	each £15
E-Type, Holed Out	each £17
Arcade Soccer, Olympics	each £17
U.I.M., Apocalypse	each £26

A3000 LEARNING CURVE

MACHINE ONLY £699 **MACHINE AND COLOUR MONITOR £899**

Acorns special offer pack of the A3000 with Acorns RISC-OS Applications (Paint, Draw, Edit, Magnifier, Calculator, Alarm Clock, Maestro and Configure), Acorns First Word Plus – a full feature Word Processor with a spelling checker and on screen graphics and Acorns PC Emulator which enables the machine to run industry standard software. Also included is Genesis, a suite of applications which include: GEN DTP, Address book, Phone book, Scrap book, Green Issues, Recipes, Composers, Story Writer, Planets and a Personal Organiser. The Learning Curve pack also includes a tutorial video and a parents guide to the National Curriculum.

*** SPECIAL OFFER ***

When you purchase an Archimedes Micro from us, we will donate 10% of the Archimedes Hardware cost towards other goods. For example, for purchasing an A3000 Learning curve colour system, you could choose to have a 1Mb RAM upgrade fitted, giving you a powerful 2Mb machine. Please phone for further details.

HARD DISC UPGRADES

(Carriage £8.00)

20Mb Hard Disc	£185
40Mb Hard Disc	£295
50Mb Hard Disc	£495
Hard disc podule (for 310)	£175

PRINTERS **(Carriage £8.00)**

Free printer lead and paper with all printers purchased (please state machine)

Citizen	
120D+	£120
Swift 24	£260
The Star 'Business Series'	
LC10	£135
LC20 Colour	£180
LC10 - II	£155
LC15	£275
LC24/200	£215
LC24/200 Colour	£250
The Star 'Professional Series'	
FR10	£320
FR15	£400
XB24-10	£400
XB24-15	£535
FR/XB Colour upgrade	£39
The Star 'Laser Series'	
Laser 8 II	£1250
Laser 8 II DB	£1695
Laser 8 II Star Script	£1775
Laser 8 II Duplex	£1975

The STAR Professional Series and the STAR Laser Series come complete with one years on site maintenance

MASTER 128 **(Carriage £8.00)**

Master 128	£375

DISC DRIVES **(Carriage £8.00)**

Single 40/80T switchable double sided disc drive	£85
As above with power supply	£100
Dual 40/80T switchable double sided disc drive	£175
As above with power supply	£195

MONITORS **(Carriage £8.00)**

Philips BM7502 Mono monitor	£75
Philips CM8833 Colour monitor	£225
Acorn Colour Monitor	£200

Why not take advantage of our system prices which enable you to obtain a complete Master system at a reduced price. Please phone us for full details.

BOOKS **No VAT**

(Carriage £2.50)

Basic V User Guide	£19.95
A3000 Technical Manual	£29.00
Programmers Ref Manual	£79.00
(Carriage £1.50)	
Master Ref Manual Pt 1&2	each £14.00
View 3, View Sheet	each £14.00

UK CUSTOMERS: Please add 15% VAT to all prices (Including carriage)

Government department and educational establishments official orders welcomed

All Prices are correct at time of going to press and are subject to change without prior notification. All goods are subject to availability. Finance is subject to status. B&S Computing (Nottm) Ltd. are licenced credit brokers. Full written details are available on request.

Your four minute friend

THE MICRO USER

Zak Kipling's utility makes sure you're never again left with a dead screen and hours of work down the drain

SURELY it's happened to you: You've just written a masterpiece, you're just about to save it when someone trips over the mains lead. Or perhaps you *COMPACT the disc first and corrupt the memory.

With this cunning program you can put a stop to this fraught state of affairs for good because it saves your program to disc automatically every four minutes.

Type in the listing and save it as SaveSrc. Correct any typing errors with the checksums and run it. This creates the machine code. Now you just copy the line that's printed at the end in order to save it.

To start up type *AutoSav, and begin writing your program. The first line must be:

```
REM > Filename
```

Spaces are irrelevent and may be put wherever you want. Quotes are not necessary, but a double quote before the filename is permitted, and must be used if the filename begins with a space or is null.

A quote mark at the end of the filename will be treated as part of the filename, except in ADFS, where it will be ignored. The right-pointing arrow, or greater than symbol, is compulsory. These lines are all correct:

```
REM > Prog1
REM>GAME
REM >$.convert
REM> "
```

The last one is a double quote mark followed by one space. But these are not on:

```
REM Program
REM >
```

The program is not saved but no error is generated.

```
REM>"Editor"
```

This is allowed under ADFS but for the DFS the name would be *EDITOR"*.

```
REM > main"
```

Also allowed under the ADFS, but for the DFS the name would be *main"*. If the format is wrong – or this line is not at the beginning – the program will not be saved. If the filename is invalid, or there is not enough room on the disc, an error will occur when there's an attempt to save the program.

You can set the time inverval between each save in seconds using the *LINE command, for example:

```
*LINE 60
*LINE 120
*LINE 210
*LINE
```

The first three set the interval to one, two and three and a half minutes, while the last one resets the value to the default of four minutes and also re-enables the AutoSav program.

*CODE has two functions: On its own, it saves the program immediately and re-enables the AutoSav program. Used like this:

```
*CODE 1
```

it disables auto-saving.

The program itself uses memory from &900 to &AFF, so don't use sound envelopes 5 to 16, RS423, or cassete files – since this is mainly used when writing the program it shouldn't be a problem.

The AutoSav program should be added to your boot file as a simple *AutoSav command so that it's set up automatically with the rest of your initialisation routines.

● *So there you have it. A useful routine to protect your valuable programs from accidental loss.*

➤

How it works

The program intercepts the event and user vectors and sets the interval timer for four minutes – the default time between saves – and enables the interval timer crossing zero event.

If the user vector is called, it first checks for *CODE, and if it isn't *CODE, for *LINE, and if it's not that either just exits. If it was *CODE the program looks at the X register, which is *CODE's first parameter.

If X is 1 the interval timer event is disabled which stops the program running. Otherwise the accumulator is set to five – the number for the interval timer crossing zero event – and the event routine called.

If *LINE has been issued the interrupts are disabled to prevent saving while the interval between saves is being altered.

The value following *LINE is read using the GSInit and GSRead routines. The actual conversion from decimal to binary involves multiplying the previous value by ten then adding the new digit.

If the event vector is called, the event number in the accumulator is checked to see if it is the timer event. If not, the program exits. Otherwise the timer is reset, and event five enabled if it has been turned off, and the first two bytes of the program in memory checked to see if they conform to the format character &0D followed by character &00. If not then it's not a Basic program and the routine exits.

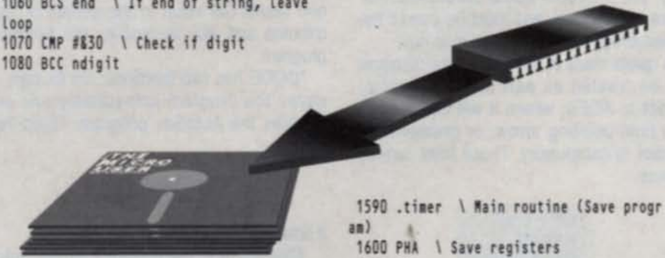
If it is Basic the first line is examined for a REM token – value &F4 – an assembler comment, \\, and a greater-than sign, >. The assembler comment is permitted because you may be using overlays to assemble large machine code programs.

The filename is extracted – if there is one – the necessary save parameters set up and finally the program is stored to disc.

➤

```
   10 REM > SaveSrc
   20 REM by Zak Kipling
   30 REM (c) The Micro User
   40 top=&12
   50 page=&18
   60 block=&70
   70 addr=&70
   80 userv=&200
   90 eventv=&220
  100 temp=&AF7
  110 interval=&AF9
  120 timebuf=&AFB
  130 gsinit=&FFC2
  140 gsread=&FFC5
  150 osfile=&FFDD
  160 osword=&FFF1
  170 osbyte=&FFF4
  180 REM Work out entry point for BASIC
 in use
  190 V%=?(&8000+?&8007+7) AND &0F
  200 IF V%=1 THEN entry=&1F
  210 IF V%=2 THEN entry=&23
  220 IF V%=4 THEN entry=&2B
  230 IF V%<1 OR V%=3 OR V%>4 THEN entry
=&00
  240 FOR I%=0 TO 2 STEP 2
  250 P%=&900
  260 [OPT I%
  270 .init  \ Initialise
  280   \ Check if user and event vector
s already set
  290 LDA eventv+1
  300 CMP #event DIV &100
  310 BNE setvecs
  320 LDA eventv
  330 CMP #event AND &FF
  340 BEQ init_time
  350 .setvecs  \ If not, set them
  360 LDA eventv  \ Save event vector
  370 STA oldvec
  380 LDA eventv+1
  390 STA oldvec+1
  400 LDA #event AND &FF  \ Set event ve
ctor
  410 STA eventv
  420 LDA #event DIV &100
  430 STA eventv+1
  440 LDA userv  \ Save user vector
  450 STA oldusr
  460 LDA userv+1
  470 STA oldusr+1
  480 LDA #user AND &FF  \ Set user vect
or
  490 STA userv
  500 LDA #user DIV &100
  510 STA userv+1
  520 .init_time  \ Set time interval
  530 LDA #&C0
  540 STA interval
  550 LDA #&5D
  560 STA interval+1
  570 .donevecs
  580   \ Load time into interval timer
  590 SEC
  600 LDA #&00  \ Byte 0 (Least Signific
ant Byte)
  610 SBC interval
  620 STA timebuf
  630 LDA #&00  \ Byte 1
  640 SBC interval+1
  650 STA timebuf+1
  660 LDA #&FF
  670 STA timebuf+2  \ Byte 2
  680 STA timebuf+3  \ Byte 3
  690 STA timebuf+4  \ Byte 4 (Most Sign
ificant Byte)
  700 LDA #&04  \ Set timer
  710 LDY #timebuf DIV &100
  720 LDX #timebuf AND &FF
  730 JSR osword
  740 LDA #&0E  \ Enable event
  750 LDX #&05  \ Interval timer crossin
g zero
  760 JMP osbyte
  770 .user  \ User vector code
  780 CMP #&00  \ Check for *CODE (Save
program now/Turn program off)
  790 BNE ncode
  800 CPX #&01  \ Check if first paramet
er 1
  810 BNE not_off  \ If not, emulate tim
er event
  820 LDA #&0D  \ Disable event
  830 LDX #&05  \ Timer event
  840 JMP osbyte
  850 .not_off \ Emulate timer event
  860 LDA #&05  \ If *CODE, act as for t
imer event
  870 JMP event
  880 .ncode
  890 CMP #&01  \ Check for *LINE
  900 BEQ line
  910 JMP (oldusr)  \ If not, exit
  920 .line  \ Code for *LINE (Set time
interval amd enable interrupt)
  930 SEI  \ Prevent timer event whilst
altering time
  940 LDA #&00  \ Set to zero
  950 STA interval
  960 STA interval+1
  970 STX &F2  \ Load command line posit
ion into &F2/3, for GSREAD
  980 STY &F3
  990 LDY #&00  \ Set offset to zero
 1000 CLC  \ String ends with space, CR,
 or second quote mark
 1010 JSR gsinit
 1020 BNE string  \ If string present, j
ump to decoding loop
 1030 JMP init_time  \ Otherwise, re_ini
tialise to 4 minutes
 1040 .string  \ Decoding loop
 1050 JSR gsread  \ Get character
 1060 BCS end  \ If end of string, leave
 loop
 1070 CMP #&30  \ Check if digit
 1080 BCC ndigit
 1090 CMP #&3A
 1100 BCC digit
 1110 .ndigit  \ If not digit:
 1120 LDA #&0D  \ Disable event
 1130 LDX #&05  \ Timer event
 1140 JSR osbyte
 1150 CLI  \ Enable interrupts to preven
t lock-up
 1160 BRK  \ Generate error
 1170 EQUB &00  \ Error number
 1180 EQUS "Bad digit"  \ Message
 1190 EQUB &00  \ Message terminator
 1200 .digit  \ If it was a digit:
 1210 AND #&0F  \ Convert ASCII code to
number
 1220 CLC  \ Add digit on to number as L
east Significant Digit
 1230 ADC interval
 1240 STA interval
 1250 LDA #&00
 1260 ADC interval+1
 1270 STA interval+1
 1280 JSR tentimes  \ Multiply by ten
 1290 JMP string  \ Continue loop
 1300 .end  \ Leave loop
 1310 JSR tentimes  \ Multiply by ten ag
ain to get centiseconds
 1320 CLI  \ Enable interrupts now alter
ations done
 1330 JMP donevecs  \ Load into timer
 1340 .tentimes  \ x10 subroutine (based
 on long multiplication):
 1350 ASL interval  \ Multiply by two
 1360 ROL interval+1
 1370 LDA interval  \ Make copy of this
number
 1380 STA temp
 1390 LDA interval+1
 1400 STA temp+1
 1410 ASL temp  \ Multiply copy by 2 (no
w original x4)
 1420 ROL temp+1
 1430 ASL temp  \ Multiply copy by 2 (x8
)
 1440 ROL temp+1
 1450 CLC  \ Add (original x 8) to (orig
inal x 2) to get (original x 10)
 1460 LDA temp
 1470 ADC interval
 1480 STA interval
 1490 LDA temp+1
 1500 ADC interval+1
 1510 STA interval+1
 1520 RTS
 1530 .event  \ Event vector code
 1540 PHP
 1550 CMP #&05  \ Check if timer event
 1560 BEQ timer  \ If it is, then go to
main routine
 1570 PLP
 1580 JMP (oldvec)  \ Otherwise exit
 1590 .timer  \ Main routine (Save progr
am)
 1600 PHA  \ Save registers
 1610 TXA
 1620 PHA
 1630 TYA
 1640 PHA
 1650 JSR donevecs  \ Reload interval ti
mer
 1660 LDA page  \ Get PAGE and store in
pointer
 1670 STA addr+1
 1680 LDA #&00
 1690 STA addr
 1700 TAY  \ Offset zero
```

SUBSCRIBE NOW!
If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*.



```
 1710 LDA (addr),Y  \ Check if first byt
e carraige return
 1720 CMP #&0D
 1730 BNE exit  \ If not, bad program, s
o exit
 1740 INY  \ Next byte (Line number MSB)
 1750 LDA (addr),Y
 1760 BMI exit  \ If bit 7 set then empt
y program, so exit
 1770 LDY #&04  \ First byte of actual p
rogram line
 1780 JSR strip  \ Skip spaces
 1790 LDA (addr),Y  \ Get byte
 1800 CMP #&F4  \ Check for REM token
 1810 BEQ comment  \ If it is, examine r
est of line
 1820 CMP #&5C  \ check if assembler com
ment '\'
 1830 BNE exit  \ If not, then exit
 1840 .comment  \ Examine rest of line a
nd check format
 1850 INY  \ Get next non-space characte
r
 1860 JSR strip
 1870 LDA (addr),Y
 1880 CMP #&3E  \ Check if '>'
 1890 BNE exit  \ If not, bad format, so
 exit
 1900 INY  \ Next non-space character
 1910 JSR strip
 1920 LDA (addr),Y
 1930 CMP #&0D  \ Check for CR (End of l
ine)
 1940 BEQ exit  \ If not then no filenam
e, so exit
 1950 CMP #&22  \ Check for <">
 1960 BNE nquote
 1970 INY  \ Increment pointer to skip q
uote
 1980 .nquote
 1990 TYA  \ Add offset to base pointer,
 so it points to the filename for OSFILE
 2000 CLC
 2010 ADC addr
 2020 STA addr
 2030 BCC ncarry
 2040 INC addr+1
 2050 .ncarry
 2060   \ Set up rest of OSFILE paramete
r block
 2070 LDA page  \ Load address (Byte 1)
PAGE
 2080 STA block+3
 2090 LDX #&00  \ Load address (Byte 0/L
SB)
 2100 STX block+2
 2110 STA block+11  \ Start address (Byt
e 1) same as load address
 2120 STX block+10  \ Start address (Byt
e 0/LSB)
 2130 LDA #entry  \ Execution address (B
yte 0/LSB) BASIC rom entry point
 2140 STA block+6
 2150 LDA #&80  \ Execution address (Byt
e 1)
 2160 STA block+7
 2170 LDA top  \ End address (Byte 0/LSB
) TOP
 2180 STA block+14
 2190 LDA top+1  \ End address (Byte 1)
 2200 STA block+15
 2210 LDA #&FF  \ Machine hi-order addre
ss for bytes 2/3 of addresses:
 2220 STA block+4  \ Load address (Byte
2)
 2230 STA block+5  \ Load address (Byte
3/MSB)
 2240 STA block+8  \ Execution address (
Byte 2)
```

```
 2250 STA block+9  \ Execution address (
Byte 3/MSB)
 2260 STA block+12  \ Start address (Byt
e 2)
 2270 STA block+13  \ Start address (Byt
e 3/MSB)
 2280 STA block+16  \ End address (Byte
2)
 2290 STA block+17  \ End address (Byte
3/MSB)
 2300 LDY #block DIV &100
 2310 LDX #block AND &FF
 2320 LDA #&00  \ Save file
 2330 JSR osfile
 2340 .exit
 2350 PLA  \ Retrieve registers
 2360 TAY
```

```
 2370 PLA
 2380 TAX
 2390 PLA
 2400 PLP
 2410 RTS
 2420 .strip  \ Space skipping subroutin
e
 2430 LDA (addr),Y  \ Get character
 2440 CMP #&20  \ Check if space
 2450 BNE stripped  \ If not, leave subr
outine
 2460 INY  \ Next byte
 2470 JMP strip  \ Continue loop
 2480 .stripped  \ Leave subroutine
 2490 RTS
 2500 .oldvec BRK:BRK  Dummy
 2510 .oldusr BRK:BRK  Dummy
 2520 ]
 2530 NEXT
 2540 PRINT" *SAVE AutoSav FFFF0900+"+ST
R$~(P%-&900)
```

Get it right ✓

```
  10 =    0 0 |  520 = BD8D 3 | 1030 = E7FA 5 | 1540 = 805E 4 | 2050 = 6C40 1
  20 =    0 0 |  530 = 2A71 B | 1040 = 51DE 8 | 1550 = 794C 5 | 2060 =    0 1
  30 =    0 0 |  540 = 6992 D | 1050 = 9EB7 A | 1560 = D3E0 3 | 2070 = 2556 3
  40 = C386 6 |  550 = B69D F | 1060 =  42A 6 | 1570 = 4C9A 9 | 2080 = 63A6 E
  50 = B653 B |  560 = EE27 C | 1070 =  960 A | 1580 = 90F7 6 | 2090 = 180B B
  60 = 743D 4 |  570 = 8F67 5 | 1080 = FAC0 0 | 1590 = FEF9 5 | 2100 = E2A5 8
  70 = 3353 1 |  580 =    0 5 | 1090 = E1B4 3 | 1600 = F674 F | 2110 = 489A A
  80 = D7D7 D |  590 = 8D00 3 | 1100 = 3C58 6 | 1610 = 5DFD 3 | 2120 = 5027 B
  90 = 1927 F |  600 = 7CB6 3 | 1110 = 28EC A | 1620 = 824E 3 | 2130 = 9D96 3
 100 = 18BE 5 |  610 = 13D1 B | 1120 = 787E 2 | 1630 = 6ECC 4 | 2140 = 3303 5
 110 = EC70 9 |  620 = 6C92 1 | 1130 = F3FB 2 | 1640 = 824E F | 2150 = F975 0
 120 = A4DA 4 |  630 = 7CB6 A | 1140 = 8E7E A | 1650 = 3F34 5 | 2160 = 2322 2
 130 =   E6 D |  640 = 7112 E | 1150 = 7FAC F | 1660 = 2556 2 | 2170 = A0C1 3
 140 = 3209 E |  650 = 11D2 8 | 1160 =  260 5 | 1670 = 4B39 D | 2180 = EA70 E
 150 = BC36 7 |  660 = CBD5 0 | 1170 = 524A 2 | 1680 = 777B 5 | 2190 = 9CDB 6
 160 = 4EF9 8 |  670 = A0A9 3 | 1180 = 6533 E | 1690 = FEB2 A | 2200 = FA51 A
 170 = 7966 7 |  680 = 9799 1 | 1190 = 524A 5 | 1700 = 66C7 3 | 2210 = 2BED A
 180 =    0 7 |  690 = 1209 6 | 1200 = 77CC D | 1710 = 72B9 F | 2220 = 2C41 C
 190 = EB74 E |  700 = A076 0 | 1210 =  CCE E | 1720 = E442 6 | 2230 = 1B71 F
 200 = 1AC3 B |  710 = CCEB 6 | 1220 = B86D D | 1730 = DFFD E | 2240 = 5920 B
 210 = AE07 5 |  720 = 3E87 9 | 1230 = D39F A | 1740 = 9709 A | 2250 = 6E10 0
 220 = 4FDA 4 |  730 = 62D8 D | 1240 = 6992 F | 1750 = FCBA 5 | 2260 = 11CA 4
 230 = 4BF8 E |  740 = 4F4E 6 | 1250 = 777B 9 | 1760 = E30E 0 | 2270 = 26FA 4
 240 = A418 2 |  750 = F3FB 3 | 1260 = CE4C 3 | 1770 = 8318 1 | 2280 = CD0A C
 250 = C92F 2 |  760 = 2151 B | 1270 = EE27 3 | 1780 = B671 3 | 2290 = FA3A 1
 260 = E106 3 |  770 = D8CC 2 | 1280 = 3113 C | 1790 = 72B9 9 | 2300 = 3FA4 6
 270 = 1119 9 |  780 = 92BC 4 | 1290 = 6B72 3 | 1800 = 2B90 6 | 2310 = 48D4 F
 280 =    0 9 |  790 = 38F1 F | 1300 = 1187 8 | 1810 = DD44 3 | 2320 = 7CB6 E
 290 = 5060 8 |  800 = B69B 7 | 1310 = 3113 D | 1820 = AFA1 4 | 2330 = 8D36 6
 300 = 8BCD C |  810 = CF2F 0 | 1320 = 7FAC 6 | 1830 = DFFD 6 | 2340 = DC83 7
 310 = 2D75 1 |  820 = 787E 6 | 1330 = AB5B A | 1840 = 2EE6 D | 2350 = 3C85 A
 320 = FA8C A |  830 = F3FB B | 1340 = 5421 6 | 1850 = 9709 9 | 2360 = 772F 7
 330 = 7E98 E |  840 = 2151 B | 1350 = DFF9 3 | 1860 =  EB1 B | 2370 = 4E8A A
 340 = BD20 B |  850 = EC3E A | 1360 = 5204 9 | 1870 = FCBA 7 | 2380 = 670E 2
 350 = 95E3 C |  860 = 9746 B | 1370 = 7BE3 B | 1880 = 3A98 0 | 2390 = 4E8A 3
 360 = 8E8A 2 |  870 = F6A0 2 | 1380 = F4BA C | 1890 = DFFD 8 | 2400 = 4C9A C
 370 = 4103 F |  880 = ED66 A | 1390 = A509 D | 1900 = 9709 F | 2410 = 9843 2
 380 = 5060 2 |  890 = A58C C | 1400 = 25FA 6 | 1910 =  EB1 E | 2420 = F38B 8
 390 = F2F0 A |  900 = E781 2 | 1410 = 56C3 4 | 1920 = FCBA B | 2430 = 72B9 C
 400 = 1605 1 |  910 = FADB 4 | 1420 = 4B9E 6 | 1930 = 9674 F | 2440 = 7FD4 0
 410 = 6B55 8 |  920 = 10B2 E | 1430 = 56C3 9 | 1940 = E99F 8 | 2450 = 5CA3 C
 420 = 27A4 B |  930 = 8881 3 | 1440 = 4B9E 5 | 1950 = 11B4 9 | 2460 = 9709 9
 430 = 21EE 7 |  940 = 7CB6 3 | 1450 = B86D D | 1960 = 893E F | 2470 = DD74 8
 440 =  CA1 3 |  950 = 6992 E | 1460 = 27B7 2 | 1970 = 9709 1 | 2480 = DFA4 7
 450 = B396 1 |  960 = EE27 5 | 1470 = D39F 3 | 1980 = 85E6 2 | 2490 = 9843 E
 460 = D24B 6 |  970 = AC2D 6 | 1480 = 6992 E | 1990 = 1261 8 | 2500 = 30D6 1
 470 = 544F B |  980 = 5B1C 8 | 1490 = B423 1 | 2000 = 74FB C | 2510 = C7C7 B
 480 =  217 1 |  990 = 5FD8 4 | 1500 = CE4C D | 2010 = F09B 8 | 2520 = 8B58 B
 490 = 5266 1 | 1000 = B86D 5 | 1510 = EE27 B | 2020 = FEB2 F | 2530 = 2C83 3
 500 = 709A 9 | 1010 = 2CEF 9 | 1520 = 9843 B | 2030 = BE60 1 | 2540 = F47F 8
 510 = 98D3 8 | 1020 = 5EC6 B | 1530 =   F6 F | 2040 = 78AE D |
```

IMPRESSION II

Impression release 2 is the first major upgrade to the leading DTP package for the Archimedes. It makes the preparation of documents, from the simplest letters to the most complex and intricate designs, easier than it has ever been before. It is the only program designed to be used as a word processor, to handle long documents while at the same time offering the most powerful page layout facilities.

Where word processing and DTP meet

As word processors grow more powerful year by year, Desk-Top-Publishing programs are becoming more like word processors, so that both types of product are evolving in the same direction. However few computers have either the power or a flexible enough operating system to allow the successful integration of the two approaches.

Impression on the Archimedes has successfully combined the best features of word processors and desk-top-publishing programs to create the logical result of that evolution. A word processor that can handle the most complex DTP, and a DTP program that can process words like no other - we call it a document processor.

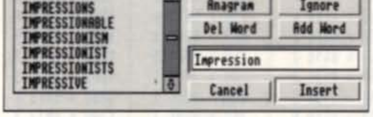
When other computers catch up with the Archimedes, all word processors will be like Impression. Why buy two programs when Impression can handle all your documentation requirements ?

Word processing

To be a successful word processor, a program has to be easy to use, include, amongst other things, real time spell checking, a powerful set of editing tools and the ability to handle documents from the simplest letter to complete books. What's more it has to be fast and responsive in use, something that lets down nearly all DTP programs.

Spelling checker

Spelling checkers have become a necessary tool in reducing errors in documents, not necessarily because they can catch spelling mistakes, but because they can also spot typing errors. The spelling checker supplied with Impression is based on the successful SpellMaster product, enhanced and fully integrated into Impression. It offers check-as-you-type, a 60,000 word main dictionary, up to 8 user extension dictionaries (which can automatically save themselves to disc) and two intelligent guess modes to help identify the correct word (one lists words that sound like the misspelt word, the other lists words based on the most common typing errors). It will even solve crossword and anagram puzzles.



IMPRESSION
IMPRESSIONS
IMPRESSIONABLE
IMPRESSIONISM
IMPRESSIONIST
IMPRESSIONISTS
IMPRESSIVE

Impression

The spelling checker dialogue

Long documents

Impression supports many features to aid the creation of long documents. By employing automatic disc slaving, it can handle documents of practically any size, even on 1Mbyte Archimedes. In fact, the memory available in the machine is no longer the limiting factor. Impression has already been used to produce books and manuals consisting of hundreds of pages, sometimes many megabytes long.

It also supports automatic index and contents compilation, again an enormous time saver. Impression 2 also has the ability to keep headings attached to the following paragraph, so eliminating 'widow' lines at the bottom of pages or columns. This improves the appearance of all documents, short or long.

As you might expect, automatic page and chapter numbering is supported along with the most flexible header and footer system around. These may be any number of lines at any position on the page, and even incorporate graphics. A new feature in Impression 2 allows headers and footers, or any frame, to repeat over a whole document or any specific range of pages.

Styles

Impression's unique style system can be a time saver for all types of word processing and DTP use. The appearance of headings, titles, quotes or any region of text can be made to appear in any combination of a vast range of stylistic effects. Each combination of effects can be given a name and applied to any required region of text with one key press. Styles save time because the combination of effects can be applied in one go rather than individually applying each effect, each time it is required. Styles are retro-active - any edit or alteration performed to a style will affect all occurrences of that style in the text. For example, if all quotes in a document are set to be italicised, and you want to change them to be bold, this involves just a single style edit.

The Impression style system is unique in two ways; firstly in the number of options available - text can be any size (even as large as the page), any line spacing, any font, any colour (background or foreground). Text may be set to have a strikethrough line or be single or double underlined. Tabs can be leadered (it automatically puts dots between tabs). Paragraphs can have an automatic ruling line placed after them (of any thickness and colour) etc etc.

Secondly, Impression styles can be applied to any region of text, from a single character to an entire document. They can also overlap, so that one style can be used in a paragraph while another is used for a few words in that paragraph. The above quote example is not possible on other DTP systems since they cannot apply a style to anything less than a paragraph.

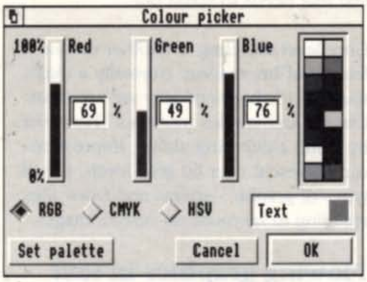
Master pages

Impression master pages are a powerful tool that provides control over the appearance of a whole document. Master pages control the size, layout and structure of all pages in a document. If you want all pages to be based on three columns on A4 paper with a graphic in the corner, then the master page can be set to create all pages in this fashion automatically. However, master pages are really powerful because, like styles, they are retro-active. Any change made to a master page will be reflected throughout a document. So, if you decide to have two columns rather than three, or perhaps arrange the page landscape rather than portrait, this can be achieved by one master page change.

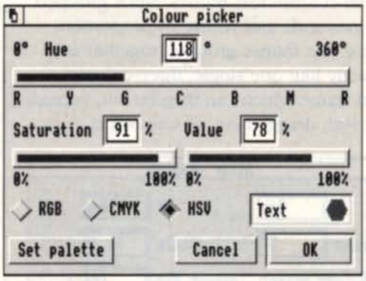
Impression supports any number of master pages (the pages can be any size) and can allow the page size to be changed *after* the document has been created.

Desk Top Publishing

All text and graphics are contained within rectangular frames. When using Impression as a word processor, these frames are created automatically on each new page, as the text flows from page to page. For desk-top-publishing work, the ability to place any frame at any position on the page gives absolute and total freedom of page design. Impression supports those features found in all good DTP programs such as the use of any font, any size. Frames of any size may be placed at any position on the page, and may be set to be transparent or opaque (any colour). By using the Acorn anti-aliased font system, it presents the ultimate in WYSIWYG displays. And since the scale of the page can be altered from 1% to 900% of actual size, it is possible to examine the page in enormous detail so that text of 1pt can be edited, or at smaller scales, complete page spreads can be viewed. Impression even allows more than one window, at different scales, on any document.



Red 69 %
Green 49 %
Blue 76 %



Hue 118 °
Saturation 91 %
Value 78 %

The RGB colour selector (left) has a pre-selection of 16 colours, but allows any colour to be defined. Three alternative colour models are available, such as HSV shown on the right, which allows new colours to be selected in a more intuitive manner. These colour selectors can be used to set the colour of just about anything in Impression - text background and foreground, line and frame colours etc.

Impression also includes two essentials needed for any high quality, professional publishing, hyphenation and text grid-lock. The latter ensures that lines of text align across columns. Examine most quality newspapers or magazines and you will see that, even when pictures or different size headings are used, the main body text remains aligned across columns.

Hyphenation is of course used in virtually all printed material. This advert, magazines, books and all newspapers use hyphenation to improve the look and readability of text, especially when arranged in columns. Impression will hyphenate automatically if required, using a combination of exception dictionary and algorithmic hyphenation. Users can add their own hyphenation points either manually in the text (using soft hyphens) or to words in the hyphenation exception dictionary.

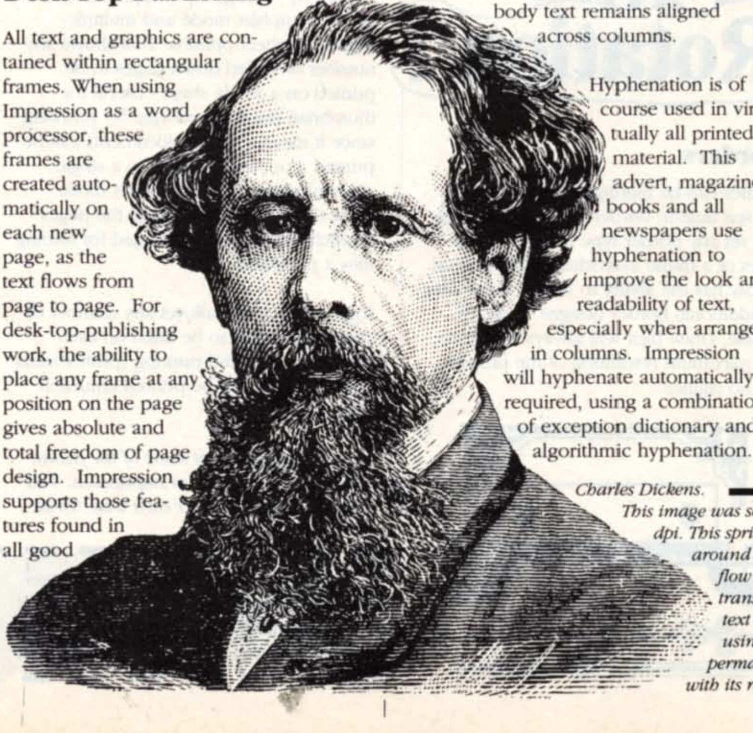
Frames

Since frames are a key part of Impression, a great deal of time has been spent ensuring that all possible frame manipulation tools are provided in a fashion that is convenient and simple to understand. Text frames can be connected to other text frames so that text will flow from frame to frame, in any desired order. (This can be displayed graphically, along with the number of words not fitting within a frame.) Any frame can be re-sized at will, and each frame can have independent repel margins. (Text can be made to repel around another frame, and the repel distance from any side of the frame can be controlled.) Text contained within a frame can also be inset from the frame edge by any amount.

Multiple frame operations

Any set of frames on a page can be temporarily selected together (multiple frame selection). In this mode the frames can be moved together as a group, and they can be copied to other pages or other documents. If one is re-sized, all others will change size by the same amount. (Imagine you want to make three columns slightly narrower - by selecting all three columns and changing the width of one, they will all change by the same amount.)

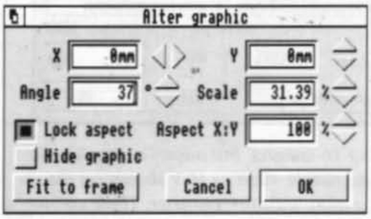
In addition frames can be permanently grouped, so captions can be permanently



Charles Dickens.

This image was scanned using the Scan-Light Junior scanner at 400 dpi. This sprite was re-touched using !Paint and a mask drawn around the head. Although Impression cannot automatically flow around irregular shapes, by placing a collection of transparent, but repelling, frames around the drawing, the text can be made to repel around any desired shape. By using the group frame facility, the repelling frames can be permanently tied to the drawing, so that the whole image with its repelling frames can be moved and scaled as one.

attached to graphics. This also allows multi-column text frames. Since grouped frames scale and re-size in proportion, three text frames grouped together act exactly like one single, three-column, text frame which can then be cut, copied, moved, dragged etc. as one object.



X 0mm Y 0mm
Angle 37° Scale 31.39 %
■ Lock aspect Aspect X:Y 100 %
☐ Hide graphic

The Alter graphic dialogue allows precise numeric values to be entered.

Graphics

Either line art graphics (for example from !Draw) or bit-image graphics such as sprites, scanned or digitised images, can be placed in a frame. The graphics can be scaled, stretched, cropped as required, all instantaneously. Graphics can also be rotated by any angle, also instantaneously. And it can do all this without going near a dialogue box or menu option. Of course you can enter exact numeric scale or rotate values if required.

All graphics scale and rotate options are performed in real time - there is no delay or calculation required, and neither is the original graphic altered. So graphics can be scaled and rotated as much as you like without suffering cumulative distortion effects. Neither could it be simpler - by using the adjust mouse button, any graphic can be dragged around the centre of the frame, interactively. Speed tests indicate that rotation of sprite graphics is over 500 times faster than !Paint.

Graphics!
Graphics!
Graphics!
Graphics!
Rotation!

Although Impression cannot directly rotate text, it is supplied with a utility program that will convert lines of text into an outline graphic file. This can be dropped onto a frame where it can be freely rotated; ideal for headlines or any text that needs to stand out.

Grey level dithering is another unique feature of Impression. Normally a maximum of 16 shades of grey are reproducible on Archimedes monitors. However, by using a dithering ability, Impression can represent over 60 grey levels, for all types of graphic - sprites and Draw files, resulting in far more on screen images.

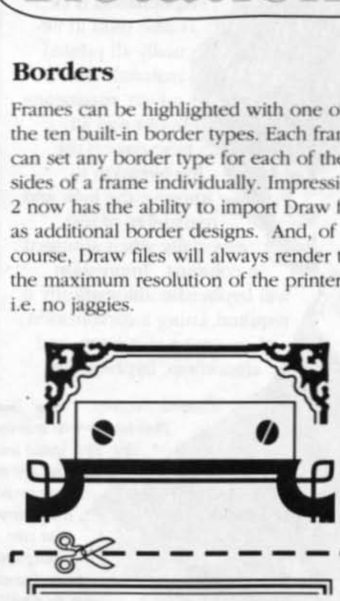
Flowing graphics in text

$$x_i = \sum_{k=1}^{n} t+m+\frac{A - Bc}{c+d} - y$$

Any document more than a few pages long, that contains graphics, usually requires the graphics to be tied to a particular part of the text. Impression can embed any graphic into the text, even as part of a line if required. For example, the above equation (from our Equasor program) embedded into the text will stay with this text wherever it is moved.

Borders

Frames can be highlighted with one of the ten built-in border types. Each frame can set any border type for each of the sides of a frame individually. Impression 2 now has the ability to import Draw files as additional border designs. And, of course, Draw files will always render to the maximum resolution of the printer - i.e. no jaggies.



◀ *Some examples of some of the frame borders possible from Impression. You can also design your own with !Draw.*

Printing

Impression has always had a very wide range of printing options. Impression 2 takes this even further by supporting two completely different modes of operation - draft printing and RISC OS printing.

Word processors typically use the built in character set of the printer - this is fast and ideal for text only documents. DTP programs, on the other hand, use the RISC OS printer drivers that can deliver an exact representation of the page, including all fonts and graphics, to the maximum resolution of the printer. Unfortunately RISC OS printing can typically take 5 or more minutes per page on most dot-matrix printers. (PostScript or direct drive laser printers are the exception to this rule.)

Impression 2 supports both modes. Draft mode allows any document to be printed using the built-in character set of the printer, matching the closest fonts available in the printer to those used on screen. This can be used for obtaining a quick text draft of any document - even complex DTP layouts. If Impression is being used as a text only word processor, this mode is fast and accurate while still allowing full control over printer attributes such as bold, italic, underlining etc. This mode even allows multi-column text, multi-line headers and footers etc and so means that Impression is now a truly effective alternative to traditional character mode word processors such as First Word Plus.

RISC OS printing in Impression allows the page to be scaled by any amount or rotated by 90 degrees. Unique features are its pamphlet mode and multiple pages per sheet options. This allows any number of scaled down pages to be printed on a single sheet - useful for thumbnail printing and vital for proofing since it means that A4 documents can be printed 2 up, as A5 pages on a single sheet of paper. The pamphlet mode takes this further by printing the pages correctly rotated and arranged for folding into a pamphlet.

Impression 2 also allows any number of copies of a page to be fitted on each sheet and reflected printing (professional typeset pages can be printed emulsion side down.)

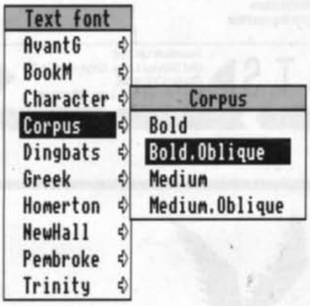
Needless to say, this document was created, arranged, edited and typeset entirely with Impression 2 on a 2Mbyte Archimedes. Line-art originated from

Word substitution

Another unique Impression feature is word substitution or abbreviation expansion - as you type. Any commonly used word or phrase can be assigned any abbreviation and added to a dictionary. When the abbreviation is subsequently entered, it is automatically changed to the fully expanded word or phrase.

Ease of use

Much of the design effort for Impression has gone into the user interface. The program has the minimum of menu options (only 6 main menu items), so new users are not overwhelmed by dozens of menus. Full use is made of dialogue boxes which can remain on screen while editing continues. For example the 'Alter graphic' dialogue, illustrated opposite, will remain on screen and dynamically indicate any alterations performed to the graphic with the mouse. The result is that, although Impression is more powerful than any alternative, it is actually simpler to learn and easier to use.



Fonts are listed by family so reducing the size of menu and making it easier to select any required weight.

RISC OS

Impression is totally RISC OS compatible and follows the Acorn RISC OS guidelines. It integrates with other programs and supports in-memory transfer with co-operating applications. For example importing a picture from !Paint, !Draw or ScanLight involves simply dropping the appropriate icon onto a blank frame in an Impression window.

Impression can access the full RISC OS character set that includes a complete set of European characters. European versions (with translated manuals, menus etc) are available.

!Draw. The scanned image was obtained using Scan-Light Junior. Proofs were produced on a LaserDirect printer (90 seconds for all 4 pages).

The IMPRESSION family

Impression 2 is part of a family of products that includes Impression Junior, a low cost, less capable, yet fully compatible version of Impression. The family therefore covers the broadest possible spread of requirements. All versions can be upgraded to more powerful versions - Junior to Impression 2 for the difference in price, Impression release 1 owners can obtain a free upgrade to release 2. All Impression owners get a regular newsletter, upgrades to future versions and the support of the largest, and oldest, software house in the Acorn market.

Unique Impression points

We could list dozens of features but the following is a list of some of the more important features that we believe set Impression apart from any other word processor or DTP program.

The Impression style system
Graphics rotate
Graphics grey-level dither
Group and multiple frame operations
The spelling checker
Built-in hyphenation
Documents larger than memory
Supremely fast and responsive
Index and contents compilation
Draft and RISC OS quality printing
18 quality outline fonts included
Retro-active master pages
Word substitution as you type
Graphics flowing within the text
The range of printing options
The ease of use
The shortest learning curve
Impression Junior
The history and experience of the Impression developers and the sheer number of man-years of effort put into this product.

Computer Concepts Ltd

Gaddesden Place, Hemel Hempstead,
Herts. HP2 6EX
Tel 0442 63933 Fax 0442 231632

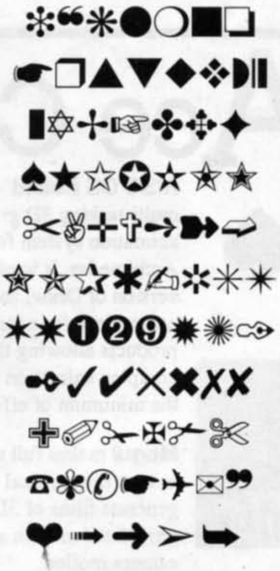
Educational discounts

A range of educational discounts, site licences and network licences are available for both Impression release 2 and Impression Junior. Contact Computer Concepts for details.

The package

The package includes: A 300 page manual with reference, introduction, tutorial section and index; the acclaimed 'DTP at a glance' introduction to desk top publishing; five discs including Impression and installation program, a selection of extra utilities (such as the previously mentioned text to Draw converter and a utility that provides over a dozen new screen modes for both normal and multi-sync monitors), a selection of clip-art and example graphics, printer drivers (licensed from Acorn) for a wide range of dot matrix, laser and ink jet printers. 18 quality outline fonts. (12 licenced from Acorn). It also includes 8 non outline, character mode fonts.

Impression is compatible with all (the every growing number of) RISC OS outline fonts and can access all weights of all fonts. The following shows some of the (over 200) symbols from the Dingbats font included as part of the set.



Money back guarantee

Your guarantee of satisfaction is that when purchased direct from Computer Concepts, Impression 2 is offered with a full 'no quibble' money back guarantee.

£169.00 +VAT (£194.25)

TECHSOFT

CAD AND CAD / CAM SOFTWARE FOR THE ARCHIMEDES / A3000

DESIGNER
intro

COST EFFECTIVE CAD

DESIGNER INTRO is a powerful, yet easy to use 2D draughting system, based on its big brother DESIGNER (ARCHIMEDES). It is ideal for the production of high quality, accurate drawings, particularly when linked to a plotter. It makes light work of all the difficult areas of CAD, such as true blending arcs and tangents, simple deletion of part lines and arcs, automatic hatching, etc. Further features include ellipses, dimensioning, text, move, rotate, mirror image, alter size, pan, zoom, etc. DESIGNER INTRO is an ideal introduction to CAD. In fact it will easily cope with all of most peoples draughting requirements.

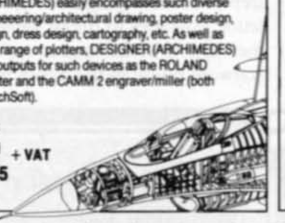
£75 + VAT
Overseas **£95**

DESIGNER
(ARCHIMEDES)

MORE THAN JUST DRAUGHTING

DESIGNER (ARCHIMEDES) offers a range of features that go well beyond just draughting. As well as a wide range of draughting options, it also provides some of the most comprehensive text (including font/symbol design), drawing manipulation and editing capabilities available. Additionally, a 3D effects option allows "3D" extrusions in a variety of projections, and wire frame solids of revolution, to be created for quick and simple visualisation. The graphic design capability of DESIGNER (ARCHIMEDES) easily encompasses such diverse activities as engineeering/architectural drawing, poster design, logo or sign design, dress design, cartography, etc. As well as supporting a vast range of plotters, DESIGNER (ARCHIMEDES) also has specific outputs for such devices as the ROLAND CAMM 1 vinyl cutter and the CAMM 2 engraver/miller (both available from TechSoft).

£195 + VAT
Overseas **£215**

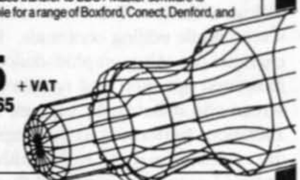


CNC DESIGNER
(ARCHIMEDES)

DRAW IT MAKE IT!

CNC DESIGNER (ARCHIMEDES) provides a means to realise the true potential of CNC lathes in education. It is an integrated CAD / CAM system comprised of the full DESIGNER (ARCHIMEDES) system plus a fully automatic post processor for CNC lathes. Simply draw a half profile of a component using the CAD routines, and a full CNC part program is automatically generated. Once generated the part program is transferred to the lathe's own software for manufacture. Simple or complex components, including part arcs, screwthreads, boring, even ellipses can be easily designed and realised by students of all ages. In many cases transfer to BBC / Master software is possible. Available for a range of Boxford, Conect, Denford, and Emco lathes.

£345 + VAT
Overseas **£365**



■ **SALE OR RETURN SOFTWARE**
All orders marked "Sale or Return" will be supplied with an evaluation disc in addition to the main disc. If the software is returned in good condition, with the main disc still sealed, within 28 days, a full refund will be given.
(Anyone in education is welcome to have an evaluation copy to review for 28 days, free of charge.)

■ All our software is packed with features far too numerous to list in detail. Besides, no advertisement can show the most important feature - the simplicity of use that guarantees a short learning curve and rapid drawing / CNC file generation.

■ **ORDERING**
Cheque with order please, payable to TechSoft UK Ltd.
Add VAT at 15% of total. (Official educational orders welcome.)

■ **OTHER PRODUCTS FROM TECHSOFT INCLUDE:**
CAD and CAD / CAM software for the BBC B / Master series
CAD related computer peripherals
Plotters + accessories
Digitisers
Cutter plotters
Engraving machine

Full information is detailed in our Product Guide available on request.

TECHSOFT CAD/CAM SPECIALISTS

TechSoft UK Ltd.
Old School Lane, Erryrys, MOLD,
Clwyd CH7 4DA.
Tel: (082 43) 318 Fax: (082 43) 564.

Ace Computing

RISC OS Euclid is the best multi-tasking 3D graphics and animation system for the Archimedes. It works like a 3D version of Draw, and now forms the centrepiece for a number of related products allowing the creation of complex animation sequences with the minimum of effort.

Mogul makes full use of **Euclid**'s unique hierarchical data structure to generate films of 3D objects with articulated motion and simultaneous camera motion.

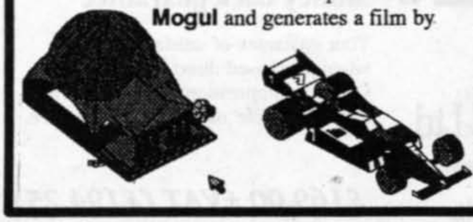
Tween produces films from Draw files. It uses techniques similar to **Mogul** and generates a film by calculating intermediate frames from a set of key positions.

Splice allows you to edit films produced by **Mogul** or **Tween**. You can even produce hand-drawn cartoons by converting sprites from any source.

Support is provided for import and export of Sprites and Drawfiles. Films can be played by the **Projector** which comes free with **Euclid, Mogul, Splice and Tween.** Films and Euclid files can be used with Genesis.

Such is the enthusiasm for **Euclid** there is now a user group called **Elements** which provides a quarterly disk containing hints, tips, animations and user pictures like the ones in this advertisement.

Euclid £70 **Mogul** £20 **Splice** £30
Tween £30 **ArcLight** £50
Ace Computing, 27 Victoria Road,
Cambridge, CB4 3BW.
Tel: (0223) 322559
All prices include VAT and P&P.



Ace Computing

COMPUTER SHOPPER SHOW 90
COMPUTER SHOPPER SHOW 90
WELCOME TO WEMBLEY
COMPUTER SHOPPER SHOW '90
Wembley, London • 6-9 December
PLOTTER

Just about EVERYONE* can save pots of money buying presents at the Computer Shopper Show!

** An exit poll at last year's Computer Shopper Show revealed that 95 per cent of visitors reported "substantial saving" from their purchases – with individual figures ranging from £50 to more than £1,000!*

- ★ **One-stop shopping for ALL your computer Christmas presents!**
- ★ **Hundreds of stands packed with special show bargains!**
- ★ **Expert advice to help you make the right choice!**

Thursday 6 December 10am-6pm

Friday 7 December 10am-6pm

Saturday 8 December 9am-6pm

Sunday 9 December 10am-5pm

And if all that wasn't enough, cut out the special voucher on this leaflet and save up to 70p off the price of your ticket!

SAVE!

Thursday 6 December 10am-6pm

Friday 7 December 10am-6pm

This voucher is worth 70p per person off the admission price to Computer Shopper '90

Only valid Thursday or Friday December 6 or 7.

OR SAVE £4 off the price of a family ticket (two adults and two children)

COMPUTER SHOPPER SHOW '90
Wembley, London • 6-9 December

Only one discount per person is allowable

SAVE!

Saturday 8 December 9am-6pm

Sunday 9 December 10am-5pm

This voucher is worth 50p per person off the admission price to Computer Shopper '90

Only valid Saturday or Sunday December 8 or 9.

OR SAVE £3 off the price of a family ticket (two adults and two children)

COMPUTER SHOPPER SHOW '90
Wembley, London • 6-9 December

Only one discount per person is allowable

Processing

Christopher Waldock provides many useful routines to help manipulate Wordwise Plus database records

LAST month we looked at the structure of the database records and a program called ROUTINE to ease the work of making changes to records and printing individual ones out. Now let's consider some special programs for more specialised actions.

The function keys are automatically set up to load special programs available in !Boot. They may be placed in any segment by pressing together Shift-Ctrl-Fkey, and will wipe out any program already in the selected segment. Of course, you can also use the menu to load the programs by name. The panel describes each in turn.

BiSortD If the Find option in Routine has been used to make entries there should be no need to sort the files in this way – Find is no use unless the files are already in order.

But if sorting is needed, BiSortD is available – the **D** denotes that records are read from disc while being sorted. **Bi** indicates a binary search is used you jump halfway into the sorted records and test to see if the sorted record lies before or after the one found.

If it passes the first test, jump back half the length of the previous jump. If it passes the second test jump forward the same amount. Repeat the operation until both tests fail. End the search and insert the new record in the current position.

You may wonder at the temporary use of three dummy records at the start and end of the file. The sorting code is optimised for speed, but as a result is liable to jump over the end of the records. The dummy records force the search back into the file.

A simpler sort would involve going through the sorted list until the record found is *greater than* the new record. This works faster when sorting only a few records.

CoSortD Uses a similar process to sort records into groups according to the members' sex, paid-up status and age. Whereas BiSortD uses the surname+forename, CoSortD uses the code field and date of birth field.

The program includes a *display* after each new record is inserted. You may, like me, wish to see the program at work and you will find you save very little time by taking this facility out.

Analyze Should be run after using CoSortD and gives, in segment one, totals for each age and sex grouping, and separate figures for those who have not paid their subscription. After Analyze you may want to run SelList to get a list of names grouped by age, for instance.

SelList This lists selected fields. If you want to list selected records only, use a program like Include or SelDel to make a file of those records first.

Using this program you can decide which fields, or lines, will be included in a list of records. For instance, you may want a telephone list with names, town and phone number.

The output is to segment one, producing a file that may be given a heading and saved for later viewing or printed out. As each record is copied to segment one it is deleted from Text so you don't run out of space.

If you select Text and enter *:type segment 1* in menu mode the output will be copied into text for processing. You could then do a global replacement of commas by tab characters (|T) to get columns lined

Data protection

The law lays down rules about what information may be kept about people in computer processed form. There is a basic requirement that any data user must register with the Data Protection Registrar. This does not apply if all you keep on file are names and addresses, or the most basic accounting records, or the most basic wages data. If you go beyond the essential data, or the essential uses, you may be required to register.

Under certain conditions the records of a club or other voluntary association may be exempt. The safest thing to do is to indicate on the membership application the kind of data to be recorded and its proposed use, and probably to make consent a condition of membership.

If you are starting a computerised record with more than simple names and addresses, bear in mind the following:

- Members should have a chance to object to their data being on the register – no objection counts as assent.
- You also need consent to disclose data to anyone outside the club, for example for insurance or travel arrangements.
- Data must only be used for the purposes for which it was gathered.
- Members do not have a legal right to see their personal entry, but it seems provocative to deny them this. Since errors and changes occur, it makes sense for them to have a chance to check each year.
- The file must only include members – so lapsed members must be removed.
- The data must be accurate and kept up to date.
- Care must be taken to guard against unauthorised access or accidental loss.

Within these limits, there seems to be no restriction on the kind of data that may be recorded if it is strictly necessary for the purposes of the club – and members approve. The rules are more detailed for cases where registration is thought to be necessary: What we have looked at here is by no means a complete statement of the law.

Is your system safe?

Apart from the Act's requirements, there is a heavy investment in time in entering data and you would not wish to lose it.

- A minimum safety requirement is probably to keep your discs locked up. If you have a fireproof container, so much the better. Can backup copies of data and programs be kept by another club officer? Even paper records need such care.
- You are, of course, following the basic

data

rules to avoid damage to your discs – don't finger them, keep them away from heat and sunlight, and don't put them on the monitor or, most important, near the phone.

- Keep your disc drives clean – you can get kits for this.
- Keep major backup discs locked with a security tab. If a working disc becomes faulty make a copy from the backup – perhaps on another machine – and use that, rather than the backup disc itself.
- If all discs fail to load, don't panic – an expert may still be able to get back all or most of your data.
- Use a voltage stabiliser if your power supply is unreliable.
- Have a reliable system for backups.

Making backups

Failure to back up work can cost you hours in re-entry. It is best to make copies at regular intervals during the day to reduce the risk. How many minutes of work are you prepared to lose? Some way of marking source material so you know which file it is entered in will also help if re-entry is needed.

We use two ways of backup for my wife's club. Firstly with each major session of alteration the data file is saved with a new date in the name: A180290 or M180290 are examples.

We have the file split in two for reasons of size. The result is that we always have the previous file or files to go back to if all the latest fail. I would aim to *WIPE away any greatgrandfather files.

Secondly, each data file is saved three times, at least once to a different disc. I often back up on to the reverse of a disc, but you can't do that with an ADFS system. Disc storage is now cheaper than the equivalent in paper copies and time is money.

Thirdly, if you want to check a data file has saved correctly – and provided there are no control codes embedded in it – *TYPE "filename" in menu mode and the file should be screened without interfering with what is in memory. If a file is not too long you can also reload it into a segment as a check.

If you are backing up a whole disc – which is probably rarely needed if you back up individual files regularly – be sure to lock it first by covering the write-protect notch. It's all too easy to get the drive specifications the wrong way round.

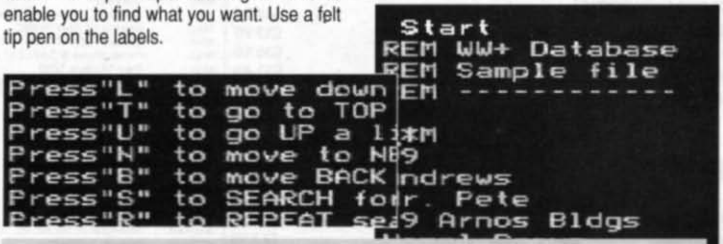
If you are going to change a disc extensively, as by compacting, work on a backup, not the original. Alternatively you can use *COPY 0 1 *.* from one disc to a newly-formatted one. I feel this is safer than compacting and the new disc will have no waste space. Only reformat the original disc when you know, by using them, that your copied files are OK.

It may seem elementary, but it's worth a reminder that unlabelled discs all look alike. When data is held on disc is is very important to be well organised with meaningful labels and perhaps catalogue files to enable you to find what you want. Use a felt tip pen on the labels.

The programs

Due to the number and length of these programs they cannot be included in the magazine but most are available on this month's subscription disc. The programs are held in one file and will need to be split up.

The programs will run but it is best first to convert them to an equivalent uncommented and compressed version using Compres, as described in the last article. They will then not only take up less memory but run faster. Both versions should be kept on separate discs.



```
Press"L" to move down
Press"T" to go to TOP
Press"U" to go UP a li
Press"N" to move to NE
Press"B" to move BACK
Press"S" to SEARCH fo
Press"R" to REPEAT se
```

```
 Start
REM WW+ Database
REM Sample file
EM -----------

*M
9
ndrews
r. Pete
9 Arnos Bldgs
```

up. Though you can program for immediate printout of a list from the records, this gives less control of what you are printing than producing a list in memory first.

Include To operate this program, files are loaded to Text – from within the program – and searched for records to be extracted. Using wildcards, **>/#** will extract all unpaid subscribers, or **>#F** will extract all women, paid or not.

The extracted records are marked top and bottom as extracts – you would not usually want them saved back under the original file name.

GlobDel This routine deletes coded records. It's a powerful option which may be used, for instance, to eliminate all members not paid up, say code **>/#**. It works on a file you have already entered into text.

If you aren't too happy about using this, you can try the main Routine program command S(eek) followed by the code and R(epeat) thereafter, while using D(elete) on each example found. If you know the members well, you may spot an error in coding in this way if one has occurred.

GlobDel may be faster than the opposite program INCLUDE. Obviously you can get the same effect by including men, or excluding women. Unlike INCLUDE, it does not provide any warning about saving the resultant file.

Stats This can be used to provide statistics of members. The documented program is self-explanatory. The most interesting part of the code is probably the right justification of the figures.

If you wish, you can add printout to the display, or type the statistics at the end of the record file.

Count This is an example of a piece of code that can be cobbled together simply in a couple of minutes to count the number of records.

Registr Perhaps the most interesting program – it is used to make an attendance register.

Integri Checks the database's integrity, stopping if the mark **>** is missing. If it reaches the end of the text all is well.

To explain, most of the utilities – including Routine – look for the **>** sign at the start of each record in order to work. This is added automatically by the subroutine ADD in the main program.

But if you make additions or changes by hand you may forget to put it in. After altering records, load this program into a segment and run it before you save the updated text.

Archimedes

	BASIC	COLOUR
A3000	see below	£847.66
A410/1	£1137.46	£1365.16
A420/1	£1344.46	£1572.16
A440/1	£1758.46	£1986.16
A540	£2999.99	£3227.00

AUTUMN SUPER SPECIALS
A3000 Basic Model
SUPER Price £589.00
OR !
A3000 JET SET PACK
TV Modulator, Euclid Interdictor
Trvial Pursuit Superior Golf
£749.99

WE ARE OPEN ALL DAY SATURDAY
WHY NOT VISIT OUR SHOWROOM !
TEST.FLY INTERDICTOR 2 OR
TEST DRIVE THE NEW A540 ARM3
****

WE WILL TRY TO BETTER ANY OTHER
DEALER PRICE ... PLEASE TELEPHONE

The Learning Curve

Now Available !
A3000 Model
Basic £723.46 Colour £981.18
A420/1 Model
Basic £1344.46 Colour £1572.16

ALL our prices include V.A.T.

Master 128	£412.96
Cambridge Z88 Lap Top	£218.44
Panasonic KX P1081	£159.00
Panasonic KX P1180	£216.55
Citizen 120D	£149.00
Seikosha SL80z 24pin	£287.00
Star LC10	£178.71
Star LC10 Colour	£223.50
Philips 8833 Colour	£260.50
Philips 7522 Amber Screen	£79.95
Philips 8832 Colour	£229.63
Tandata Colour Medium Res	£195.00
Ahkter 40/80 400K Sgle no PSU	£99.37
Ahkter 40/80 800K Dual no PSU	£199.76
Ahkter 40/80 400K Sgle & PSU	£131.69
Ahkter 40/80 800K Dual & PSU	£276.20

OAK COMPUTERS

20 Mb Ext HDisc (B & Master)	£595.41
SCSI 20Mb Add HDisc A3/410	£475.24
SCSI 20Mb Ext HDisc A3000	£584.49
SCSI 45Mb Add HDisc A3/410	£606.34
SCSI 45Mb Ext HDisc A3000	£715.59
SCSI Card for A3000	£217.41
SCSI Card for A3/410	£217.41

WE ARE LICENSED CREDIT BROKERS AND CAN OFFER FINANCE ON COMPUTERS AND SOFTWARE. WE OPERTATE THE ACORN TEACHER AND ACADEMIC SCHEMES FOR TRAINING AND FINANCE. PLEASE TELEPHONE !

0457 865953

0457 866917

COMPUTECK Ltd.

Dinting Lane Industrial Estate
Glossop
Derbyshire SK13 9NU
Visa-Master-Lombard Cards

ACORNSOFT

Desk Top Publisher (A)	£137.08
ISO Pascal ROM (BMC)	£55.20
Lisp (BMC)	£18.40
Logistix (A)	£102.46
Micros in Business (BMC)	£39.95
Twin (A)	£30.00
View 3.0 (B)	£47.84
View Index (BMC)	£11.96
View Plot (BMC)	£23.95
View Professional (BMC)	£79.94
View Sheet (BMC)	£47.84

COMPUTER CONCEPTS

Inter-Base (BMC)	£55.20
Inter-Chart (BMC)	£29.44
Inter-Sheet (BMC)	£45.08
Inter-Word (BMC)	£45.08
Inter-Sheet (A)	£35.88
Inter-Word (A)	£35.88
Laser Direct Laser Printer	£1091.41
Spell Master (BMC)	£47.19
Impression II (A)	£174.91
Impression Junior (A)	£93.10

CLARES MICRO SUPPLIES

Alpha Base (A)	£44.94
Artisan 2 (A)	£53.95
Toolkit (A)	£35.95
Interdictor 2 (A)	£31.45
Knowledge Organiser (A)	£53.95
Fontwise package (BMC)	£26.99

IMPACT SOFTWARE

The Real McCoy (A) Discs	£26.95
Man at Arms (A)	£17.95
Holed Out (A)	£17.95
Apocalypse (A)	£26.95
Nevyron (A)	£17.95
The Olympics (A)	£17.95

PRES

Adv. Control Panel (BMC)	£32.08
Adv. Disc Investigator (BMC)	£26.73
Adv. Disc Toolkit (BMC)	£32.08
Adv. File Manager (BMC)	£25.87

PRES Archi products all discounted !!

MINERVA SYSTEMS

System Delta+Card Index (BM)	£58.45
System Delta Plus (A)	£71.95
Atelier (A)	£89.95

DABS PRESS

Master Guide Book	£11.65
Viewstore/Sheet Book	£11.65
Archimedes DFS Disc	£26.95
"C" A Dabhand Guide	£13.45
Z88 A Dabhand Guide	£13.45
Archimedes Beginers Guide	£8.95

Autumn Stock Clearance

Goupil Golf Laptop/Desk PC 1meg 286
40meg H/disc VGA ..... Retail £4023.85
SAVE £1024.85....... ***SALE Price £2999.00***

Amstrad PC2086HD 12" VGA colour
30meg H/disc .... Retail £1263.85
SAVE £113.85 .... ***SALE Price £1150.00***

Amstrad PC2086SD Mono monitor
3.5" Floppy Drive .... Retail £688.85
SAVE £89.95 .... ***SALE Price £599.00***

Schneider AT286 Tower 40meg H/disc
14" Mutisync Colour ..... Retail £2300.00
SAVE £310.00 ...... ***SALE Price £1990.00***

Western Digital 30meg H/Card £299.95
SAVE £50.00 ...... ***SALE Price £249.95***

This advert contains just a few of the items we have Please telephone or send a SAE for our FULL price lists

We specialise in "Trading in" and buying Used Hardware & Software

Post and Packing.Charges
£1.00 for small, £2.45 for medium items.
Expensive products £8.50 for courier

USED STOCK SELECTION from COMPUTECK Ltd.

(B) BBC B (M) Master 128 (C) Compact (A) Archimedes

COMPUTERS & HARDWARE

Acorn	BBC B 1770 DFS Series 4	264.50
Acorn	BBC B 1770 DFS Series 7	287.50
Acorn	BBC B 8271 DFS Series 4	264.50
Acorn	BBC B 8271 DFS Series 7	287.50
Acorn	Master 128	325.00
Acorn	Master 512 Board	175.00
Acorn	Master Turbo Board	80.50
Acorn	Z80 Second Processor	161.00
Misc.	Z80 Second Processor	103.50
Acorn	Green Screen	49.00
Misc.	Brother HR40 Daisy Wide Carr.	399.00
Acorn	Second 3.5 Drive A310 Inc FP	69.99
Akhter	Dual/Dr 5.25 40/80T no PSU	149.50
Cumana	S/Drive 40/80 5.25	85.00
Misc.	Dual Drive 40T no PSU	96.00
Misc.	Dual Drive 80T no PSU	139.00
Pace	Dual Drive 40T no PSU	96.00
Viglen	Single Drive 40/80 no PSU	69.00
A M S	AMX Mouse	23.00
Acorn	Data Recorder ALF03	17.25
Acorn	Master ROM Cartridge	9.20
Acorn	Prestel Adaptor (BM)	46.00
Acorn	Twin Joysticks (B)	9.20
Comp Con	ROM/RAM Podule (A)	29.00
Database	Z88 to BBC Link	16.10
Misc.	Competion Pro joystick	11.50
Misc.	Delta 14B/1 Interface/Voltmace	6.90
Misc.	Delta 3B Joystick (B)	6.90
Misc.	Delta 3B Tiwn Joystick	9.50
Misc.	Delta 3s Joystick	4.60
Misc.	Grafpad	69.00
Misc.	Ground Control Eprom Eraser	19.55
Misc.	Joystick I/F Atari to BBC	4.60
Misc.	Miracle Tech WS2000 Modem	69.00
Misc.	Printer Sharer 6 Comps to 1 Pr	184.00
Misc.	Prism Modem 1000	39.00
Misc.	Prism Modem 2000 In Software	69.00
Misc.	Spectravideo Joystick (B)	6.90
Misc.	Terrel printer Sharer Box	26.45
Misc.	Timer Kit	9.20
Misc.	Twin Joysticks	8.90
Misc.	UV Stat Epromer	19.55
Morley	Quad Cartridge 4 x 16k	11.50
Morley	Smart Cartridge (M)	23.00
P M S	Second Processor 6502	69.00
Watford	16K Disc RAM Board (B)	23.00
Watford	Light Pen + Software (B)	11.50
Watford	Sideways ZIF Socket (B)	13.80
Watford	Speech Synthesizer	19.95
Watford	User Port Splitter	17.25

BOOKS

Acorn	Advanced User Guide BBC	10.00
Acornsoft	Econet Advanced User Guide	4.75
Acornsoft	Econet level 1 User Guide	3.00
Acornsoft	Econet level 2 User Guide	3.00
Acornsoft	Lisp on The BBC Micro	8.00
Acornsoft	View Ref Manual	6.00
Dabs Pres	Archi Assem Lang Book & Disc	13.04
Dabs Pres	View Dabhand Guide	8.00
Dabs Pres	Viewsheet/store Dabhand Guide	8.00
Misc.	212 Games for BBC M James	3.00
Misc.	2nd book Listings/M Bryant	2.00
Misc.	30+ Programs BBC / C. Evans	3.00
Misc.	36 Challenging Games for BBC	3.00
Misc.	6502 Reference Guide/ A Tully	5.00
Misc.	Adv'cd Machine Code/Stephenson	5.00
Misc.	Adv'd Progamming by J McGregor	4.00
Misc.	Advnd Basic ROM UGuide/C Pharo	8.00
Misc.	Assembly Lang Prog I Birnbaum	4.00
Misc.	Basic from the Ground Up	3.00
Misc.	BBC Micro MC A P Stephenson	3.00
Misc.	BBC Revealed by J Ruston	3.00
Misc.	Beyond Basic / R Freeman	4.00
Misc.	Companion to BBC Micro	3.00
Misc.	Creating Advntr Progs on BBC	4.00
Misc.	Creative Graphics John Cownie	4.00
Misc.	Data Processing/Hardwr & Progm	0.00
Misc.	Data Processing/Sys Anal & Des	5.00
Misc.	Forth on the BBC Micro	5.00
Misc.	Functional Forth by B Allan	4.00
Misc.	Graphic Art for BBC / B Allan	3.00
Misc.	Graphics Book and tape (B)	5.00
Misc.	Inside Your Computer/ Sinclair	3.00
Misc.	Mastering Assmby Code/R Vials	5.00
Misc.	MC56500 Manual	4.00
Misc.	The Book of Listings/BBC Publ	2.00
Misc.	The Super-User BBC Micro Book	4.00
Watford	Epson/Kaga Printer Commands	2.95

SERIOUS SOFTWARE

A M S	3D Zicon (BM) Disc	13.80
A M S	AMX Art & Paint Pot (B) ROM	25.00
A M S	AMX Super Art (M) Disc	28.75
A M S	AMX Super Art ROM (B)	28.75
A M S	Extra! Extra! (BM) Disc	13.80
A M S	Mouse & Super Art (M) Disc	34.50
A M S	Stop Press (B) ROM	28.75
A M S	Utilities (BM) Disc	8.05
Acorn	PC Emulator (A) Discs	69.00
Acorn User	Sideways RAM Uils (B) Disc	3.45
Acorn User	User Rom	13.80
Acornsoft	Basic Editor (BMC) ROM	17.25
Acornsoft	BCPL ROM (B)	36.01
Acornsoft	BCPL Stand alne Gen (BM) Disc	13.80
Acornsoft	Fortran 77 (A) Disc	69.00
Acornsoft	GXR Rom (B) ROM/Tape	19.00
Acornsoft	HI - View (B) Disc	25.30
Acornsoft	Linkword German (Tape)	11.50
Acornsoft	Linkword Italian (Tape)	11.50
Acornsoft	Logo (E) ROM & Tape	18.00
Acornsoft	View 2.1 (B) ROM	19.95
Acornsoft	View Spell (BM) ROM & Disc	25.00
Acornsoft	View Store (BMC) ROM	34.50
Acornsoft	Viewsheet (BMC) ROM	34.50
Acornsoft	Workshop (B) Disc	6.90
Audiogc	Swift Spr'd S'T (B) Tape & ROM	13.80
BBC Pubs	ArcComm (A) Disc	23.00
BBC Pubs	Drawing (B) Tape	3.90
BBC Pubs	Early Learning (B) Tape	4.60
BBC Pubs	Painting (B) Tape	3.45
BBC Pubs	VU-Type (B) Tape	6.90
Beebug	C Lang (BM) 2xROMs	34.99
Beebug	Command ROM (BM) ROM	23.00
Beebug	Exmon II (B) ROM	17.25
Beebug	Help (ROM) (B)	11.50
Beebug	Masterfile (B) Disc	11.50
Beebug	Masterfile II (B) Disc	13.80
Beebug	Masterfile II (C) Disc	13.80
Beebug	Paintbox (B) Disc	9.20
Beebug	Printwise (BM) Disc	17.25
Beebug	Quickcalc (B) Disc	9.20
Beebug	Quickcalc (C) Disc	9.20
Beebug	Sleuth (B) ROM	20.70
Beebug	Sprites Utils (B) Disc	6.90
Beebug	Studio 8 (B) Disc	13.80
Beebug	Studio 8 (C) Disc	13.80
Beebug	Teletext (B) Tape	4.03
Beebug	Teletext Pack (B) Disc	8.05
Beebug	Toolkit (B) ROM	13.80
Beebug	Toolkit Plus (B) ROM	20.70
Beebug	Vocab Tester (B) Tape	9.20
Beebug	Wordease (B) ROMs	13.80
Clares	Artisan (A) Disc	17.25
Clares	Artroom (C) Disc	17.25
Clares	Artroom (M) Disc	13.80
Clares	Artroom Pack (C) Discs	23.00
Clares	Artroom/Ace (M) Discs	17.25
Clares	Beta Base (B) Disc	16.50
Clares	Beta Base Utils (B) Disc	6.90
Clares	Fontwise + (C) Disc	10.01
Clares	Fontwise Plus (BM) Discs	11.50
Clares	Grafdisc (B) Disc	6.90
Clares	Toolkit Plus (A) Disc	29.50
Clares	View Printer Dr. for FX80	3.45
Comp Con	Caretaker (B) ROM	13.80
Comp Con	Communicator (B) ROM	34.50
Comp Con	Graphics (BM) ROM	17.25
Comp Con	Gremlin (B) ROM	17.25
Comp Con	Inter-Sheet (BMC) ROM	34.50
Comp Con	Inter-Word (BMC) ROM	34.50
Comp Con	Printmaster (BMC) ROM	17.25
Comp Con	Printmaster Star (BMC) ROM	17.25
Comp Con	Wordwise (BMC) ROM	20.70
Comp Con	Wordwise Plus (BM) ROM	30.00
Dabs Pres	Master 512 Shareware (M)	13.80
Dabs Pres	View Book Prgms (BM) Disc	3.45
Database	Arcade Game Creator (B) Disc	6.90
Database	Basic Utils (B) Disc	4.60
Database	Education Progs (B) Disc	4.60
Database	Fun School 8-12 (BM) Disc	6.90
Database	Fun School under 5 (BM) Disc	6.90
Database	Mini Office II (B) Disc 80t	8.50
Database	Mini Office II (B) Tape	4.60
Database	Mini Office II (C) Disc	11.50
Database	Rom & Disc Utils (B) Disc	4.60
Incentive	Graphic Adv Creator (B) Tape	11.50
Isle log	Music System II (B) Tape	6.90
Micro Pow	Basic Extension (B) ROM	17.25
Minerva	Gamma Plot (A) Disc	46.00
Mirror	Fleet Street Editor (B) Disc	28.75
Mirror	Star Seeker (B) Tape	4.60
Misc.	ADE+ (M) 2xROM	34.50
Misc.	AIDS II by Soft Smith	9.95
Misc.	Bank Manager (B) Disc/Contex	11.50
Misc.	Busucalc (BM) Disc/Supersoft	9.95
Misc.	Crossword Puzzler (B) Tape	4.60
Misc.	Data Gem Database (B) ROMs	13.80
Misc.	Dotprint + Tecnomatic ROM	13.80
Misc.	Family History Micro Aid (A)	17.25
Misc.	Gemini Combo Pack (B) Disc	13.80
Misc.	Graphics Pack (B) Tape Solamon	3.45
Misc.	Inform by CJE (M) Disc	11.50
Misc.	Insant Recall D/base (B) tape	6.90
Misc.	Instant Recall D/Base (BM) Dis	9.95
Misc.	Invoicing (B) Disc	11.50
Misc.	Merlin Database/Scribe (B) ROM	19.94
Misc.	MICAD CAD Prog (B) Disc	11.50
Misc.	Multifont NLQ + fonts CJE	23.00
Misc.	Novacad (B) ROM	39.00
Misc.	Pro Punter (BM) Discs	34.50
Misc.	Record Keeper (B) Tape	4.60
Misc.	Slave + ROM (B)	23.00
Misc.	Spanish level A (BM) Disc	11.50
Misc.	Spanish level B (BM) Disc	11.50
Misc.	Spy (B) ROM	13.80
Misc.	Star Stick (B) ROM	11.50
Misc.	Starfinder (B) Tape + Book	6.90
Misc.	Utilities Package (B) tape	4.60
Misc.	Visifax-Viewdata (B) ROM	23.00
Misc.	Vu-Calc (Psion) (B) Tape	9.20
Misc.	VU-File (B) Tape	11.50
Misc.	ZOOM Mach. Code Monitor (B)	11.50
P M S	Multifont fonts (BM) Disc	6.90
Pace	Commstar (BM) ROM	17.25
Pace	Micronet Terminal (B) ROM	9.20
PRES	Adv'd Disc Toolkit (BM) Rom	23.00
PRES	Advnc'd 1770 DFS (B) ROM	23.00
Silicon Vis	Super Dump (BM) Disc	17.25
Superior	Speech! (BM) Disc	4.60
Vine	Addcomm (BE) ROM	16.95
Watford	Beebmon (B) ROM	23.00
Watford	Dumpout 3	13.80
Watford	NLQ Designer (BM) ROM	13.80
Watford	ROM Manager (B) ROM	11.50
Watford	View Printer Driver ROM	28.75
Acornsoft	Codename Droid (BM) Disc	6.90

GAMES

Acornsoft	Elite (BM) Tape	3.45
Acornsoft	Free Fall (B) Disc	4.60
Acornsoft	Me & My Micro (E) Tape 8 Games	1.73
Acornsoft	Revs + 4 Tracks (BM) Disc	9.20
Acornsoft	Snapper (B) Disc	4.60
Audiogc	Psycastria (BM) Disc	6.90
BBC Pubs	White Knight II (B) Tape	4.60
Clares	Interdictor (A) Disc	14.95
Design P	Sink the Bismark (BM) Disc	4.60
Doctor Sft	Double Phantom (B) Disc	11.50
Domark	Not a Penny More (B) Disc/Book	6.90
Domark	Trivial Pusuit (B) Disc	6.90
Impact	Cheat Again Archi 1 (A) Disc	6.90
Impact	Clogger (B) Disc	6.90
Impact	U.I.M. (A) Disc	14.95
Impact	Zenon (BM) Disc	3.45
Mandarin	Icarus (B) Disc	4.60
Mandarin	Lancelot (BM) Disc	6.90
Micro Pow	Dr Who & Mines (MB+) Disc	6.90
Micro Pow	Imogen (B) Disc	4.60
Micro Pow	Magic I (BM) Disc	5.75
Micro Pow	Magic II (C) Disc	4.60
Minerva	Minotaur (A) Disc	9.00
Minerva	Missile Control (A) Disc	9.00
Misc.	Art of Micro Graphics/McGregor	10.35
Misc.	Avon & Murdac (A) Disc	9.50
Misc.	Computer Crosswords (M) Disc	6.90
Misc.	Fish (A) Disc	17.25

Deleted files can usually be brought to light by clever prying eyes. But not if you use Stuart Tyrell's super scrubber

Secure as Fort Knox

EVERYBODY knows that if you want to prevent someone from reading the data in a particular file all you have to do is delete it from disc. Then it's gone – completely safe from prying eyes. Correct? Unfortunately not.

If only things were that simple. Format a completely fresh disc then, from Basic, enter this program:

```
10 PRINT "This is an example"
20 PRINT "(Your name here)"
```

Save this as TEST with:

```
SAVE "TEST"
```

Now delete the file you have just saved by entering:

```
*WIPE TEST
```

Take the disc out of the drive and turn the computer off for 10 seconds. Clearly, the program is no longer in the memory and you have just wiped it from disc.

Turn the micro back on, re-enter Basic, put the disc back in the drive and type in the following commands

```
*CREATE PROGRAM 1000
LOAD "PROGRAM"
LIST
```

Recognise it? Your – erased – confidential data is not as secure as you thought.

The solution

But all is not lost – or rather, all *can* be lost. The program presented here provides a way of securely deleting your files so they cannot be inspected with the use of a disc editor, the method above, or even by highly sophisticated equipment.

Type the program in, ensure it is correct using the checksums, and type RUN. A module called Scrubmod will be saved to disc. You can load it with:

```
*Scrubmod
```

or by double-clicking on the file from the DeskTop. The module adds a new command:

```
*Scrub
```

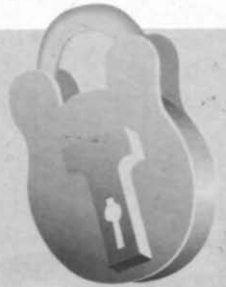
which will securely delete the file mentioned by first writing over it seven times with zeroes before finally deleting its entry from the catalogue.

The file is overwritten seven times because although another file may be saved over the top of it, magnetic traces of the original data remain on the disc and the file may still be read using specialised equipment. Saving over the file seven times is sufficient to reduce the traces of the old file to such a level that they are undetectable.

● **One word of warning: Although the module may be very useful for deleting confidential documents and business files, there is no way in which your data may be recovered after it has been scrubbed, so don't destroy files which you need.**

```
10 REM >ScrubSrce
20 REM By Stuart Tyrrell
30 REM (c) The Micro User
40 MODE 0
50 PROCassemble
60 PROCsave
70 END
80 :
90 DEFPROCassemble
100 DIM mc 2048
110 Help$="FileScrub"+CHR$9+"1.00
("+MID$(TIME$,5,11)+")"
120 FOR pass=4 TO 6 STEP 2
```

➤



➤

```
130 P%=0:O%=mc
140 [OPT pass
150     DCD 0
160     DCD 0
170     DCD 0
180     DCD 0
190     DCD title
200     DCD help
210     DCD commands
220 .title
230     FNs("FileScrubUtility")
240 .help
250     FNs(Help$)
260 .commands
270     FNs("Scrub")
280     DCD scrubentry
290     DCD &10101
300     DCD syntax
310     DCD scrubhelp
320     FNs("ScrubAuthor")
330     DCD 0
340     DCD 0
350     DCD 0
360     DCD authorhelp
370     DCB 0
380 .syntax
390     FNs("Syntax: *Scrub <Filename>")
400 .scrubhelp
410     FNs("*Scrub <Filename> 'Securely'
deletes a file by first overwriting it
with CHR$(0)'s, so the data may not be
recovered using a disk editor.")
420 .authorhelp
430     FNs("File Scrub Utility was writ-
ten by S.Tyrrell for The Micro User")
440 .return DCD 0
450 .remove
460     EQUS "REMOVE"+CHR$32+CHR$32
470 .string
480 ]:P%=P%+256:O%=O%+256
490 [OPT pass
500     ALIGN
510 .scrubentry
520     STR R14,return
530     ADR R2,string
540     .copyname
550        LDRB R4,[R0],#1
560        CMP R4,#32
570        MOVLE R4,#0
580        STRB R4,[R2],#1
590     BGT copyname
600 .checkok
610     FNnl
620     SWI "OS_WriteS"
630     FNs("Are you sure you want to
scrub '")
640     ADR R0,string
650     SWI "OS_Write0"
660     SWI &127
670     SWI &120
680     SWI &13F
690     SWI "OS_Confirm"
700     SWI "OS_WriteC"
710     CMP R0,#121
720     BNE end
730     FNnl
740     SWI "OS_WriteS"
750     FNs("Scrubbing : Pass 0")
760 .openfile
770     MOV R0,#200
780     ADR R1,string
790     MOV R2,#0
800     SWI "OS_Find"
 810     MOV R8,R0
820     MOV R1,R8
830     MOV R7,#0
840     .outerloop
850        MOV R2,#0
860        MOV R0,#1
870        SWI "OS_Args"
880        ADD R7,R7,#1
890        ADD R0,R7,#48
900        SWI &17F
910        SWI "OS_WriteC"
920        .loop
930           ADR R2,here
940           MOV R0,#2
950           MOV R3,#1024
960           SWI "XOS_GBPB"
970           BVS error
980           MOV R0,#5
990           SWI "OS_Args"
1000           CMP R2,#0
1010        BEQ loop
1020        CMP R7,#7
1030     BLT outerloop
1040     MOV R2,#0
1050     MOV R0,#0
1060     SWI "OS_Find"
1070     FNnl
1080     SWI "OS_WriteS"
1090     FNs("Deleting Catalogue Entry")
1100     ADR R0,remove
1110     SWI "OS_CLI"
1120 .end
1130     FNnl
1140     LDR R15,return
1150 .error
1160     ADD R0,R0,#4
1170     FNnl:FNnl
1180     SWI "OS_Write0"
1190     MOV R2,#0
1200     MOV R0,#0
1210     SWI "OS_Find"
1220     B end
1230     .here
1240 ]
1250 NEXT pass
1260 FOR T%=O% TO O%+1023 STEP 4
1270 !T%=0
1280 NEXT
1290 ENDPROC
1300 :
1310 DEFPROCsave
1320 SYS "OS_File",10,"Scrubmod",&FFA,,
mc,O%+1023
1330 PRINT'"Module saved as 'Scrubmod'"
1340 ENDPROC
1350 :
1360 DEFFNs(Text$)
1370 [OPT pass
1380 EQUS Text$
1390 DCB 0
1400 ALIGN
1410 ]:=0
1420 :
1430 DEFFNnl
1440 [OPT pass
1450 SWI "OS_NewLine"
1460 ]:=0
```

SUBSCRIBE NOW!

If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*.

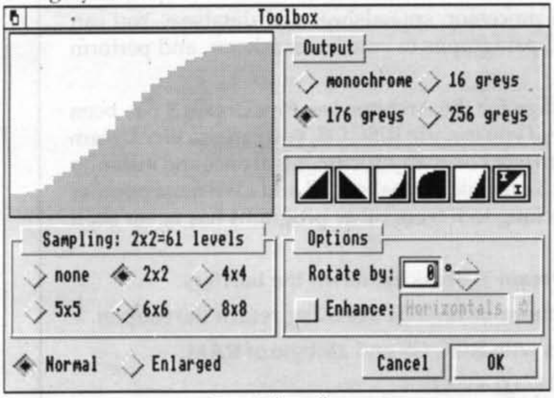
Get it right ✓

```
 10 =    0 0    230 = 8837 7   450 = E1DB 6   670 = 6D62 1   890 = 1AB7 A
 20 =    0 0    240 = 5B46 5   460 = BB49 6   680 = 4002 C   900 = 8CC6 2
 30 =    0 0    250 = EDDB 4   470 = DD01 7   690 = C015 6   910 = 5509 8
 40 = 6075 5    260 = A75E 6   480 = B123 3   700 = 5509 E   920 =  325 6
 50 = 126A D    270 = 4208 8   490 = 4E48 6   710 = 8CA4 E   930 = A10E 3    1110 = 64BE 7   1290 = ED0F E
 60 = 90DB 9    280 = D0D4 F   500 = 24FA 4   720 = 2651 4   940 = 9B19 3    1120 = E188 3   1300 = 9719 C
 70 = FD2E F    290 = D934 D   510 = 1055 0   730 = E453 2   950 = A2F8 0    1130 = E453 7   1310 = 7A2C A
 80 = 9719 1    300 = 3CBB A   520 = 91D1 1   740 = 567A 8   960 = 27A7 F    1140 = 9D2C 7   1320 = AD6F 1
 90 = 98E9 4    310 = 4B75 7   530 = F9A9 A   750 = 29E5 5   970 = B333 0    1150 = D394 2   1330 = 2D65 7
100 =  1F8 A    320 = A81B 1   540 = 4E75 7   760 = C708 7   980 = EBFE 9    1160 = 3B4D 4   1340 = ED0F C
110 = 6FFD 0    330 = 9CF6 3   550 = 51FD 6   770 = 74CF 3   990 = FC7B 0    1170 = E994 9   1350 = 9719 3
120 = A1D2 C    340 = 9CF6 B   560 = F8AC A   780 = 31DC D   1000 =  BC7 1   1180 =  803 4   1360 = 7BA9 D
130 = 8FDA D    350 = 9CF6 F   570 = 4A9D E   790 = 5633 E   1010 = 2484 7   1190 = 5633 0   1370 = 4E48 D
140 = 4E48 0    360 =  156 E   580 = C2D1 1   800 = 9A62 4   1020 = C765 6   1200 = BB5B 1   1380 = 7BD8 2
150 = 9CF6 B    370 = 2E56 9   590 = C079 C   810 =  5F0 0   1030 = 3EC9 0   1210 = 9A62 8   1390 = 2E56 6
160 = 9CF6 4    380 = 5A3C C   600 = 897D F   820 = 778F 7   1040 = 5633 5   1220 = 1639 3   1400 = 24FA 4
170 = 9CF6 2    390 = 70B5 4   610 = E453 3   830 = EA76 1   1050 = BB5B 6   1230 = 39AE 8   1410 =  B43 0
180 = 9CF6 5    400 = E0B1 4   620 = 567A E   840 = 5CB8 E   1060 = 9A62 8   1240 = 8B58 5   1420 = 9719 D
190 = 9C18 9    410 = 2A3C 4   630 = 1BC4 8   850 = 5633 0   1070 = E453 E   1250 = 301F C   1430 = 75D6 5
200 =  48C C    420 = C1D7 E   640 = 760F A   860 = AB7A F   1080 = 567A C   1260 = 55B1 C   1440 = 4E48 9
210 = E7BD 7    430 = ED0B C   650 =  803 F   870 = FC7B D   1090 = E978 B   1270 = 3583 3   1450 = C6E8 3
220 = FD02 6    440 = F5C7 A   660 = 1D85 B   880 = 2381 1   1100 = 4AD5 E   1280 = 2C83 C   1460 =  B43 1
```

SCAN LIGHT Plus

The latest generation Scan-Light Plus software provides a new easy to use and very powerful interface to the range of Scan-Light scanners and represents the most advanced software available for monochrome scanners on the Archimedes.

The main features of Scan-Light Plus centre around the scan toolbox. This controls the altered image view and allows the original scaled image to be sampled or anti-aliased in numerous different ways. This feature allows monochrome dithered scans to be turned into full grey-level sprites, ideal for incorporation into DTP or other programs. For example 4 by 4 sampling provides 16 grey-level images, while 8 by 8 sampling will turn an image into a 64 grey-level.



Output: ○ monochrome ○ 16 greys ● 176 greys ○ 256 greys

Sampling: 2x2=61 levels: ○ none ● 2x2 ○ 4x4 ○ 5x5 ○ 6x6 ○ 8x8

● Normal ○ Enlarged

Options: Rotate by: 0 °

☐ Enhance: Horizontals

Scan-Light toolbox.

The grey-map allows precise and accurate control over these grey-levels. The grey-map cannot only lighten or darken the image but also invert it or, more usefully, compensate for any non-linearities in the original picture or the printer. The grey map provides direct control over the gamma correction curve. The toolbox also controls the number of greys in the output file - it's even possible to typeset images with 176 grey-levels suitable for photographic quality results.

Features include:

- Totally RISC OS compatible supporting in-memory transfer.
- Preview during scan to indicate progress.
- Two views of scanned image, original and altered.
- 61 grey-level screen display.
- Horizontal and vertical image flip.
- Prints either original or altered image, any scale, upright or sideways.
- Region select and crop to any rectangular portion of image.
- Original or altered image may be scaled by any amount.
- Original or altered sprite save.
- Sprite load facilities.
- A variety of altered image options;
  - 6 sampling options from 1 by 1 to 8 by 8 sampling.
  - Full control over brightness and contrast.
  - Full grey-map control.
  - Non-distorting image rotation in steps of one degree.
  - Image rotation 500 times faster than !Paint.
  - Additional image enhancement options such as edge detection.

All existing Scan-Light owners can obtain free upgrades.

Scan-Light Junior A3000	£189.00 + VAT
Scan-light Junior	£189.00 + VAT
Scan-Light II A4	£399.00 + VAT
(Optional sheet feeder for A4 scanner)	£100.00 + VAT

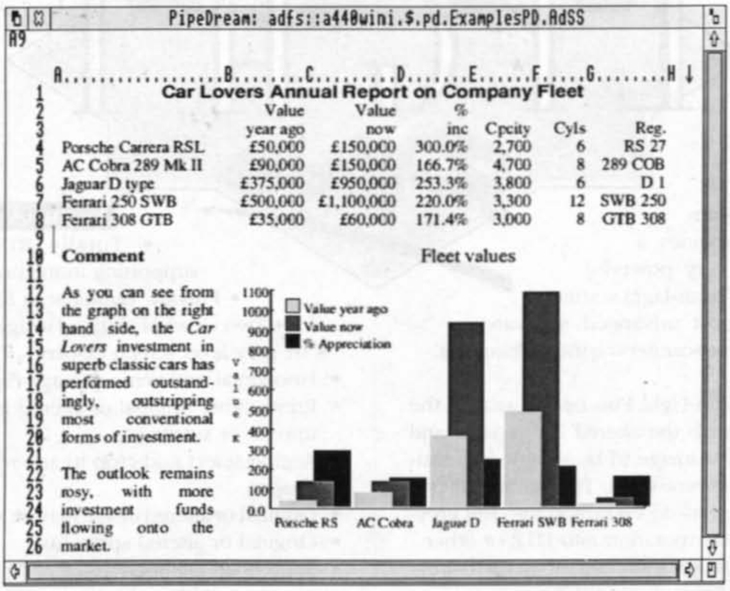
Details subject to change without notice.

Computer Concepts Ltd

Leading Edge Hardware & Software Technology

Gaddesden Place • Hemel Hempstead • Herts • HP2 6EX • Tel. 0442 63933 • Fax 0442 231632.

PIPEDREAM 3



1 **Car Lovers Annual Report on Company Fleet**

		Value	Value	%			
		year ago	now	inc	Cpcity	Cyls	Reg.
4	Porsche Carrera RSL	£50,000	£150,000	300.0%	2,700	6	RS 27
5	AC Cobra 289 Mk II	£90,000	£150,000	166.7%	4,700	8	289 COB
6	Jaguar D type	£375,000	£950,000	253.3%	3,800	6	D 1
7	Ferrari 250 SWB	£500,000	£1,100,000	220.0%	3,300	12	SWB 250
8	Ferrari 308 GTB	£35,000	£60,000	171.4%	3,000	8	GTB 308

10 **Comment**

12 As you can see from the graph on the right hand side, the *Car Lovers* investment in superb classic cars has performed outstandingly, outstripping most conventional forms of investment.

22 The outlook remains rosy, with more investment funds flowing onto the market.

PipeDream 3 breaks down the barriers between word processor, spreadsheet and database. You can include numerical tables in your letters and reports, add paragraphs to your spreadsheets, and perform calculations within your databases.

Based on PipeDream 2, the best-selling integrated package for the Archimedes, PipeDream 3 has been completely re-written to take full advantage of RISC OS - if you can use RISC OS, you can use PipeDream 3. It is fully multi-tasking and multi-windowing, so you can work on many documents at once and instantly move information between them. And since PipeDream 3 can automatically load and save most popular file formats, including VIEW and First Word Plus, switching to it from other programs has never been easier.

Power, flexibility, speed, ease of use. PipeDream 3. Breaking down the barriers.

For a free brochure, see your Archimedes dealer, or phone us on 0954 211472 or return the coupon.

PipeDream 3 is for all Archimedes computers with RISC OS and 1Mbyte of RAM.

PipeDream 3 costs £147.00 +VAT.

Major features include:

- many documents loaded at once
- intuitive RISC OS user interface
- displaying and printing of pictures within text
- built-in 93,003 word spelling checker
- file compatibility with PC & Z88 PipeDream and BBC View Professional
- background recalculation
- keystroke compatibility with Z88 & PC PipeDream
- Z88 filing system
- automatic loading of VIEW, ViewSheet, Lotus, First Word Plus, Tab and CSV files
- automatic saving of VIEW, Lotus, Acorn DTP format, Tab and CSV files
- multi-field sorting
- use of all available fonts
- 62 spreadsheet functions
- external references for 3-D modelling
- macro file recorder
- slot protection

For a free brochure, complete and return this coupon
PipeDream 3 ☐ View Professional ☐
Name ____________________
Address ____________________
____
____
____________ Post code ____________

Colton Software, Broadway House, 149-151 St. Neots Road, Hardwick, Cambridge CB3 7QJ, England.
Fax: 0954 211607 Tel: 0954 211472
MU1

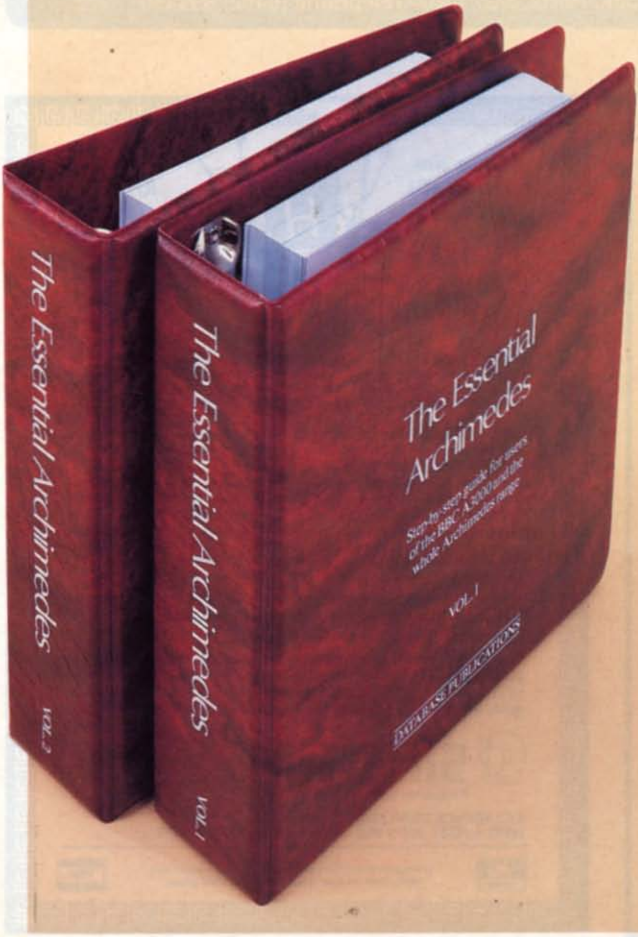
All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Lingenuity's Presenter 2 and then loading the resulting graph back into PipeDream 3.

Colton Software, Broadway House, 149-151 St. Neots Road, Hardwick, Cambridge, CB3 7QJ, England.
Fax. 0954 211607 Tel. 0954 211472

The ESSENTIAL companion for every BBC A3000 owner!

Two volumes that reveal ALL about the Archimedes

EVERYTHING you need to know about your BBC A3000 – and the whole of the Archimedes range – can be found in The Essential Archimedes. Mailed to you in complete sections each month, it builds up over the coming year into TWO packed volumes – the most comprehensive tutorial guide for your micro ever published. Sample programs and demonstration files are supplied on disc and there are lots of easy-to-follow hands-on examples each month.



Here's a selection of some of the topics covered each month:

- ***Word Processing:*** Produce really impressive, professional-looking documents – from simple letters and CVs to large mail-shots. You'll discover a variety of different techniques you can use and the methods to implement them.
- ***Spreadsheets:*** Design and manipulate spreadsheets of all kinds – from home accounts and small business finance to statistics and engineering – and exploit the number-crunching power of your computer to the full.
- ***Databases:*** Choose the type of database that will help make your life easier – whether just storing a telephone number list or computerising all your company records.
- ***DTP:*** Find how easy it is to be your own publisher. Learn all the techniques you need to present any document – from a newsletter to a book – in a really professional manner.
- ***Art:*** Replace paint and brush with your micro. Use the full potential of !Paint and !Draw, and learn about even more sophisticated packages that introduce you to the exciting world of micro art.
- ***Design:*** Discover the limitless magic of CAD – from drawing the plans for a home extension to creating impressive animated displays to amuse your family.
- ***Music:*** Compose and play tunes on your computer, getting great sounds from the software that comes with your micro. Also learn how more powerful packages and add-ons can take you even further into a new world of melody.
- ***Hardware:*** Read about the ways you can expand and enhance your system – printers, modems, memory expansions, disc drives, digitisers and monitors.
- ***Education:*** Learn how your computer can lend a helping hand right through the curriculum – and for all ages: Maths, English, Art, IT, Languages, Business studies, Social education, History, Geography and Music.
- ***Programing:*** Get to grips with Basic, from first steps to mastering the built-in window environment. Even raw beginners will soon find themselves writing their own programs.

And there's much, much more!

By the end of the course you'll have picked up a tremendous amount of useful knowledge that our experts have learnt over many years' experience. They'll reveal quick ways of doing things, explain terms and show how most problems can be easily overcome.

I wish to subscribe to **The Essential Archimedes** at the special Micro User price of £56. I understand that if I elect to pay by credit card you will debit my account in four equal instalments of £14.

I wish to pay by:

☐ 4001 Cheque/Eurocheque made payable to Database Publications Ltd

☐ 4002 Access/Mastercard/Eurocard/Barclaycard/Visa/Connect Expiry Date ☐☐ / ☐☐

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Name ______________ Signed ______________

Address ______________

______________ Post Code ______________

Daytime telephone number in case of queries ______________

Send to: Database Direct, FREEPOST, Ellesmere Port,
South Wirral L65 3EB (No stamp needed if posted in UK)

Order at any time of the day or night

Orders by phone: **051-357 1275**

Orders by fax: **051-357 2813**

Don't forget to give your name, address and credit card number

Orders by MicroLink: **MAG001**

General Enquiries: **051-357 2961**

MU12

Access

VOLTMACE

VISA

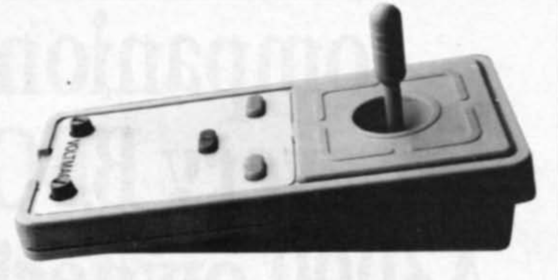
DELTABASE B FLIGHT SIMULATOR JOYSTICK

A precision yoke style joystick complete with fire buttons. The joystick slides in and out to dive or climb and rocks from side to side to bank. The whole unit clamps to the front edge of your computer bench and plugs into the analogue port of a BBC B or Master. Deltabase B will also work any other joystick software.

The DETABASE B is available from the major Acorn dealers at just **£29.95**, or direct from us.

Delta 3B, Single BBC Joystick	£14.95
Delta 3B, Twin, Double BBC Joystick	£21.95
Delta 14B, Joystick with Keypad	£16.95
Datapad 16B, Add-on BBC Keypad	£39.95
3.5" Drives, In carriers to replace 5.25"	£60
DFS Kits, Archimedes disc interfaces etc.	

All prices inclusive of VAT and P&P



ARCHIMEDES JOYSTICK

The DELTA-CAT mouse eliminator is a sprung return to centre, light weight, light action joystick which plugs into the mouse port of any Archimedes series computer and will immediately operate mouse-driven software such as ZARCH.

Moving the stick a little will simulate moving the mouse slowly in the direction that the stick is pointing. The greater the movement of the stick the faster it will move. Thus you can move the pointer anywhere quickly around the screen and slow down for accurate positioning.

The real benefit of the DELTA-CAT comes with custom written software such as the INTERDICTOR jetfighter simulator from CLARES MICRO PRODUCTS. Impact's Soccer Game - Arcade Soccer and more programs to come soon.

The DELTA-CAT is available from the major Archimedes dealers at just **£29.95**

MOUSE SPLITTER BOX ONLY £19.95

Plugs in under an A3000 and leaves you two mouse sockets so you can leave the mouse and the DELTA-CAT plugged in permanently and switch between the two, without lifting the computer

Unit 9, Bondor Centre, London Road, Baldock, Herts. SG7 6NG. Telephone (0462) 894410

MICROFIX

A440-1 & Colour Monitor	£1825
A420 Learning Curve & Monitor	£1475
A3000 Learning Curve & Colour Monitor	£1000
A3000 Learning Curve	£725

Memory Upgrade at £65 per Meg

40 Meg Hard Disc Kit..........£325

A540 EXCLUSIVE OFFER

VGA/Multi Sync Monitor with every A540 purchased before 31st December 1990

£3450

Mail order prices are inclusive of VAT and delivery

17 DOVER STREET
CANTERBURY, KENT
Tel: 0227 455419

Ask for our Archway 4GL catalogue

V1.2
RISC OS
ONLY

ARCHWAY
4GL

ARCHWAY 4GL lets YOU unleash the huge program power of RISC OS and the ARM easily and quickly. Build powerful multi-window applications with pop-up menus, icons, mouse control, etc. of a professional quality. Programs are fully RISC OS multi-tasking and appear on the icon bar. All using BBC BASIC.

ARCHWAY 4GL provides a total environment for program creation including **tools, shell** program with **run-time** code, extensive **examples** and a **library** of functions and procedures.

An in-depth user guide takes you gently step-by-step through a progressive series of some 50 program building sessions from complete beginner to advanced level. All examples are on disc ready to run.

The complete system (V1.2) comes on 4*800k discs with a 500-page ring bound user guide. You need an Archimedes or A3000 with 1M or more of RAM and fitted with RISC OS. One disc drive is sufficient. There is no extra licence fee to distribute copies of the run-time in your programmes.

"You get an excellent piece of software which will make the mountain of programming needed to operate the WIMP environment into a molehill". — Archive, July 1989

"Archway is one of the most impressive and best value-for-money products that I have yet seen for the Archimedes . . . anyone who wishes to write RISC applications in BASIC 5 would have to be quite insane NOT to enlist the aid of this remarkable package" — A&B Computing, February 1990

SIMTRON
Programs to help you

£99.95
incl. VAT & p/p

4 CLARENCE DRIVE, EAST GRINSTEAD,
WEST SUSSEX RH19 4RZ Telephone (0342) 328188

Access

Cheques/POs/official orders or Access/Visa number and expiry date. 24-hour 'phone for Credit Card orders.

VISA

PROBLEM Solved

Your technical questions answered by MIKE COOK

From tape to disc

I HAVE recently acquired a Watford Electronic 40/80 track disc drive for my BBC B. I'd like to transfer some ancient material from tape to disc, but as the tape system isn't working I'm wondering if there is anything inside the computer I can swop over temporarily to get the files on to disc.

Both the cassette recorder and its cables have been checked thoroughly, so the problem is obviously in the computer. Any suggestions? – E. Vincent, Dinton.

●*The main component that goes wrong in the tape interface is the LM324 quad op amp chip located just beside the tape input socket. Unfortunately, on some boards it's soldered in and is quite a job to replace.*

What you must do is cut out the old chip using side-cutters and then unsolder each chip leg seperately. Then you can solder in a new socket and replace the chip – which should cost less than £1.

However, extracting an old chip does call for skill if you are not to mess up the board. Perhaps your best bet would be to borrow someone else's machine for the transfer. You might try contacting a local school. They could be willing to let you use their machine for a small consideration in cash or kind.

Topics on the agenda...

- USA frequency problems
- Controlling stepping motors
- Hardware/software incompatability
- Diagnostic disc problems
- Damaged roms
- Connecting a Tube
- TRS80 printer problems
- Correct voltages
- Making a graphics tablet
- Connecting an IBM green screen
- Salvage from a tape interface

Keep taking the tablet

HAVE you ever made or thought of making a graphics tablet which could be interfaced to the BBC Micro? I would be grateful for any information. – **R. Williams, Bury.**

●*A simple pantograph graphics tablet was described in the June 1983 (Vol 1 No 4) issue of* The Micro User. *Though perhaps a bit of a collector's item now, this uses two potentiometers and a bit of maths. Other forms of tablet are a bit too involved for a magazine article.*

Connecting an IBM green screen

I AM trying to connect a BBC B+ 128k computer to an IBM green screen monitor. Would it be possible to use a circuit similar to the one published in the May issue of *The Micro User?* – **R. Clarke, Rochdale.**

●*Yes, it is possible to use a green screen monitor with the sync seperator pack 58. Two different types of monitor are available, those that take in the RGB signal and mix it and those that require a composite video signal. If it is the former, just connect it up as in my article in the May issue.*

However, if you have the latter, connect the Video Out at the back of the computer to the Video In of the monitor. You'll still need the sync separator to provide the vertical and horizontal syncs.

Capacitor voltage

I HAVE started to build the graphics digitiser from the June 1983 Body Building, but have hit a problem – it doesn't state what voltage the electrolytic capacitors are. I can get the components from a local dealer as long as I know the voltage.

The June 1989 Body Building article told how to make a Whole-body joystick, but I'd like to know what value the four resistors are. – **M. Whitbread, Chapeltown.**

●*The resistors in the Whole-body joystick should be 1MΩ as was shown in Figure III. However, virtually any value from 3kΩ upwards should do – as long as they are the same – as they only work as a potential divider.*

As for the capacitors, the voltage rating is only the maximum the capacitor can take before being damaged. As there is less that 5 volts in the circuit, any capacitor with a voltage rating of greater than this will do. In fact it's difficult to get capacitors with less.

Lower case please

PLEASE help me with a printer fault – I can't print lower case characters. I have an old TRS-80 line printer, linked via the parallel port to a BBC B. There are only seven data lines on the printer which I have connected leaving the eighth disconnected.

When the character set is sent to the printer all is fine until CHR$(95). Then instead of printing CHR$(96) it starts duplicating CHR$(64) onwards. As the printer only cost £6 I think it's worth repairing. – **D. Riley, Birmingham.**

●*There is nothing wrong with your printer. I had a TRS-80 – one of the first commercially available micros in the late Seventies, it had an operating system more sophisticated than the IBM PC has today. However, despite this it could never*

➤

When is a problem not a problem?

I HAVE a Watford Diagnostic disc which I run every few months to check my Master 128. Since I tried it last I have installed the new Master 128 system rom issued by Acorn. The test drive now fails on ram locations &8000 upwards.

Have I got trouble or is this a quirk or the rom, as I haven't noticed any problems with the programs I run? – **P. Stonebridge, Ipswich.**

● *Any diagnostic program can only perform a limited amount of fault detection. If your computer works at all, 95 per cent of it must be OK. What programs like this do is add up all the numbers making up the rom software. They then compare this to the result on a known system. If you put a different system in, this number will be different and so the utility will report an error.*

➤

display lower case, so the official printer had no need to print lower case characters. In those days people were moving from mainframe computers with teletypes that only printed in upper case, so they saw no need for a computer to produce lower case characters.

Processor hang-up

WHEN trying to use my friend's 6502 second processor with my BBC B and Disc Doctor nothing happened. Why? – **P. Eagles, Olney.**

●*In order to use a second processor you need to have the Tube interface code in rom. This is normally in the disc interface rom kit known as DNFS (Disc and Network Filing System). This code is also included in the later Watford DFS roms.*

Without it your computer cannot access a second processor. However the situation with Disc Doctor is slightly different. When it was originally written, Tube processors were uncommon so it doesn't take them into account, hence there is no effect.

Dead, but not forgotten

THE October issue of *The Micro User* mentioned an apparently damaged ViewSheet rom. I have a damaged version 1.0 – in &A000-&A3FF every eighth byte from &A006 onwards has its top and bottom bits set. So, for example, &00 becomes &81 and &7E becomes &FF. Everything else is as it was when it was new. What might the cause be? – **H. Boothroyd, Gaydon.**

● *All things must die and that includes electronic chips. In most cases failure is due to the breaking of internal connecting wires that are so thin that they make a human hair look like a telegraph pole. The normal mode of failure is due to corrosion from moisture getting into the package.*

However, elevated temperatures can cause these thin wires to melt. Another cause can be the diffusion into crystal deformations of the materials used to make the device. As the rom is made up of a number of identical cells arranged in a matrix, it's common for a run of memory locations to go bad all in the same way. It's not so much the memory locations as the addressing connections. Having said this, your rom did die early – most can expect a much longer life.

Stepping stones

I NEED to control two small stepping motors with a BBC B. Although I am already familiar with the additional circuitry, I just don't know how to power it with the 5 volts from the computer, or how to produce digital output in the form of fast pulses.

Do I need additional hardware or can I use the printer or user port? – **R. Conroy, Rowlands Gill.**

●*You can't connect stepping motors directly to the computer's port – you need to use some interface circuitry. You can find this described in the May 1984 issue of* The Micro User.

You can power the motor from the auxiliary power output of the computer as most stepping motors will run from 12 volts. However, the switching can cause interference on the power lines which could cause the computer to malfunction. This would require you to use supply decoupling techniques or a separate power supply.

As to generating the pulses it is simply a matter of software – again supplied in the earlier article.

Frequency shakes

FOLLOWING the guidelines in the July issue of *The Micro User* I tried to connect an IBM PC monitor to my BBC Micro. I am based in the USA and have connected the monitor to the modified micro after connecting pin 6 of the RGB socket to pin 9 of IC33, not 8. Unfortunately, it seems to be having some problem with the vertical hold.

At times the picture is stable, but sometimes it shimmers as if it is jumping up and down a scan line rapidly. Other times it jumps intermittently up and down a line. These effects seem to be random and I cannot adjust the monitor to correct them.

When I change mode the monitor usually loses the hold and the screen smoothly scrolls up a frame and locks again. What do you advise? – **J. Wright, Michigan, USA.**

●*The mains frequency is different in the USA and this is contributing to your stability problems, as the monitor is having the tendency to lock on to hum generated from the mains.*

These symptoms are normally associated with the frame oscillator running at the edge of its lock-in range. It should be possible to find an adjustment within the monitor which will restore stability. However, remember there are dangerous high voltages inside a monitor.

If there is no adjustment the frame oscillator capacitor will have to be changed to move it closer to the desired frequency. A TV engineer should be able to do this for you..

In search of the Grail

I RECENTLY bought Lancelot from Level 9 and have been unable to make it work. I've fitted a Watford solderless sideways ram board with 16k in two 4364 chips. Unfortunately, the game fails to find this sideways ram, although it does wipe anything present in the ram at the time.

I have written to both Watford and Level 9. Level 9 say that it is probably a faulty ram board and I could try to dissemble the !Boot program and alter the code. As I have no machine code dissembler nor understanding of machine code, I decided against this option. Watford Electronics say the game is probably to blame for not recognising the ram and assure me that the 4364 is exactly the same as the standard 6264. What do I do? – **M.R. Davies, Carterton.**

●*It's always difficult to say who is to blame when a piece of hardware and software don't get on. Especially as both were designed with no knowledge of each other.*

Certain assumptions must be made when designing anything, and in the absence of definitive guidelines conflicts are bound to arise. Perhaps we should blame Acorn?

However, assuming that in all other respects the sideways ram board is working, the onus must be on the software. Having said that though, I know that it's difficult for software authors to know about all the possible hardware configurations. I think you must be resigned to the fact that they are incompatible.

ATELIER

The definitive art package for the Archimedes

812 772
Help on Circle Fill.
Draw a filled in circle.
1:Choose the centre
2:Choose the radius
Note: The 2nd point is on the circumference of the circle.
The usual shape flags are observed - see line etc.

Set Fill Style

TILT 343
LEAN 39
X AXIS SCALE
Y AXIS SCALE
Points Used 4
Atelier

"- I didn't think that there was room in the market for another art package of any quality but I was wrong........along comes "Atelier" from Minerva Software and what an art program it is!.......It takes the computer art program to a new level !"

(A & B Computing August 1989) -

£99.95 inc. VAT

M·I·N·E·R·V·A

SOFTWARE

69 SIDWELL STREET · EXETER EX4 6PH · TEL: EXETER 0392 437756 · FAX: 0392 421762

Horse trading

The Mad Hatter goes shopping and picks up a few bargains

SHOPPING sprees are always enjoyable – provided you have some cash – but the trip to Harrids Department Store in this section of *Oxbridge* is going to involve some careful manipulation of objects. Pardon the pun, but it's more like a shoplifting exercise.

A hat and scarf have to be collected, but neither can be taken into the stairwell area without the shop's alarm ringing. Trying to use the lift – with its *Out of Order* sign – is an experiment you'll only attempt once.

The answer to this puzzle lies in employing a little lateral thinking in order to achieve a vertical resolution. The procedure is to take each object to the west end of the building on the same floor as you found it, summon the lift and open the doors.

Now you enter the lift and drop the object. Leave the lift, return to the ground floor and then summon the lift which will safely deliver the item required.

The precise moves are: E, N, N, N, N, N and Say Exeat to leave college then N, N, E, W, E, E, N, E, U, U and W. The hat awaits you here, so take it, go W, press the button to summon the lift, N to enter the lift and drop the hat.

Now move S, E, E, U and W to the scarf. Take it and go W and press the button for the lift, enter it and drop the scarf. The final moves to complete this section are: S, E, E, D, D, D, W, W, Press Button, N, Take Hat, Take Scarf, S, E, 12 moves S, W into the Trophy Room and there drop both items. Your score should now be 75.

I wonder if you have tried gaining access to the master's lodge? Well, the programmer won't admit you until you have solved the next puzzle – getting the various horses into their correct places. So it's time for the horseplay.

Go E, N, N, N, W, W, W, W, W, W, N and W and take the gelding then proceed E, N, N, N and drop the gelding. All right, I know you need to be a Hercules to carry a horse – and these aren't the Augean Stables anyway – but Take and Drop are the easiest input for getting the animals to follow you before leaving them in the manger stalls.

Now go S, S, S, W, N, take the stallion, moving S, E, N, and N before dropping it. Next proceed S, S, W, N, N, for the mule and S, S, E, N and drop it. After this move S, W, N, N, and N to find the percheron. Go S, S, S, E, S, S, S and S then drop it.

It's time for the equine equivalent of musical chairs now: N, N, N, N, N, TAKE STALLION, S, S, S, S, DROP STALLION, N, N, N, N, N, TAKE GELDING, S, S, S, S, and drop it.

Now we continue with the roundup by going N, W, and S for the mare then N, N, N, N, to drop it. S, S, S, S and S gets you the pony N, N, N, N, and drop it. Off again S. S. S. S. S. for the donkey and back as before.

We are now into the final moves of this evolution, so make your way S, S, S, S, S, for the foal, take it N, N, N, N, E, N, N, N and drop it. Next go S, S, S, W, N to the donkey and S, E, N and N to its stall.

Last manoevres of all are: S, S, W, N, N, Take Pony, S, S, E, N, Drop Pony, S, W, N, N, N, Take Mare, S, S, S, E and drop it. You can now go S and E to take the golden horseshoe and E then N to the master's lodge – and there I'll leave you for this month.

(To be concluded next month).

Grave discovery

Tom Chothia has discovered what he thinks is a space graveyard in **Elite.**At first he thought it was a group of four pirates, but they didn't move or return fire. As he closed in on them he saw that they were shielding a Worm class ship. Whatever they were, he was rewarded for destroying them.

Tom also raises an interesting point about the existence – or lack of it – of rock hermits. He encountered an asteroid that was harder to destroy than norma. Eventually it spewed out some cargo canisters and a Krait.

Since a friend with a 16-bit version has encountered something similar, only with more Kraits that were hostile, Tom wonders if it could be a space dredger. I've always taken it to be a hermit, and reckoned that the Krait is an escape ship.

My tactic is to let the Krait go but scoop up the cargo. However, you pays your money and you takes your choice.

While on this topic, Andrew Jenkins wrote in puzzlement about a strange encounter that indicates he has come across a hermit who was a trifle aggressive. This is what he had to say:

I was in deep space and I saw a kind of round ship. I went very close, paused the game and, looking in the manual, identified it as an asteroid. I brought my ship alongside and prepared to shoot it with my mining laser, when suddenly it started shooting at me.

The attack didn't do a lot of damage, and Andrew soon silenced it – but his status moved from Offender to Fugitive. It's a cruel world. However readers should note that Andrew has an unexpanded BBC Micro and the disc version of **Elite,** which means that encounters like that are possible for everyone with a disc drive.

Hatter's Helpline

I have had a plea for help from Peter Hewlett who is stuck in Epic's **Wheel of Fortune** and is having difficulty with the beggar in particular.

My former colleague Pendragon came up with the answer here: Give the penny to the beggar just *after* he has passed the vending machine and is walking down Beggars Walk. After that, things should go smoothly provided you wait for him to return and he hasn't been warned off by the policeman.

Barbara Bassingthwaite, an experienced adventurer, has come up with the necessary help for Ray Briddock who was stuck in **Dennis through the Drinking Glass**.

Dennis must have a drink every 10 moves: A drink too early makes him drunk, too late and he sobers up. The initial moves are as follows: N, N, Hide (until Maggie leaves), Get Golf Clubs, S, E, N, Examine Pot, Take Flask, Drink. After that it is a matter of methodical imbibing coupled with exploration.

I have some good news for those of you who would like to carry more items in certain Scott Adams and Digital Fantasia adventures – thanks to David Shepherdson. David warns, however, that his tip will not work on the later adventures such as **Kayleth**.

You *LOAD the adventure and then enter this line of code:

```
?&341F=x:CALL &1902
```

then press Return. Replace *x* with the number of items you want to carry, up to a maximum of 255. For example, if you want to carry up to 16 items:

```
*LOAD (name of adventure)
```

press Return and then enter:

```
?&341F=16:CALL &1902
```

For Digital Fantasia adventures the poke is:

```
?&1A1F=16:CALL &1D9B
```

Tom Chothia has offered help for those stuck in **Spellbinder** and **Spycat**. Let's take **Spycat** first: Suffocation in space can be prevented by possessing – but not using – the oxygen tank.

In space you'll find a resignation note which needs to be taken to Q. You can bypass the thirsty Brit by using a cup of tea, and Q will then give you Document X.

Garry Sawdy says that you should use the glucose pill – from the Greenland Embassy – before using the space permit in this game.

In **Spellbinder** you need to deal with the carnivorous plant like this: Take the worms, which are found on the table to the right of the mixing tool, add readily available sulphur and feed the plant with the poisoned mixture. Tom asks where he can find the mushrooms for the storm spell.

A recent plea from Alison Leigh made me realise that quite a number of readers have problems with the early moves in **Egyptian Adventure**. So instead of the hints that I've offered from time to time, here are some specific moves which will prove helpful:

At the start, take the rope, then move W, W to cross the bridge and pick up the torch. Now you must WORSHIP AMMON-RA, ignore the message that results, climb the obelisk and take the golden disc.

Go back down and worship again. You will now be able to cross the bridge safely instead of being hurled to the crocodiles below.

Once again, this is a reminder that whenever you come to a place of worship – temples, shrines and the like – you should always do the appropriate thing: Try entering KNEEL, PRAY, WORSHIP or some other devout action. It never does any harm and usually proves beneficial.

While we are on the business of getting people started, Max Kolombos has sent in some advice for those having trouble with **Jinxter**.

Here are the first few moves in that very entertaining adventure. Wait (four times), Show Ticket to inspector, Wait (three times), Press Button, Wait (three times) Get Out, Take Keyring, Wait (twice), Read Document, Open Gate, N, Drop All Except Keyring, Open Door with Iron Key – and off you go.

Max realises that the oil and water need to be separated, but he hadn't figured out that the oil needs collecting in the can that previously contained the worms.

He's also stuck at the baker's, but I get the feeling he's not been digging either. Max, you should drop the worms – use the milk bottle to hold them – on the compacted earth and let them help you. When you get to the baker's try your hand at a little baking.

Adrian Pearce wonders what use the gold, diamonds, rubies and the like are in **Gisburne's Castle**. The answer is fairly simple: For the most part they are just treasures, but the sapphires can actually be used in the cellar.

Alex Hunsley keeps exhausting his lamp in **Philosopher's Quest** about 20 moves before the end. Alex, you must only use the lamp when it is absolutely necessary. There are locations in this adventure that are well-lit and the lamp should then be turned off until it is needed again.

To save extra moves remember that you can extinguish the lamp one move before you enter a lit location and don't need to relight it until you're actually in a dark location

Alex wonders where he can get a spare copy of Kingdom of Hamil. I suggest he inquires at Topologika, P.O. Box 39, Stilton, Peterborough PE7 3RL. Brian Kerslake might be able to help.

It had to happen, didn't it? I've finally had a letter from Commander Blackadder. He has had a cassette-based version for three months and is now Deadly. He has a tip for Baldrick: If you fancy a spot of drug-running, try trips between Errati (buy) and Usraar (sell) in Galaxy Six.

M'Lord also posed a question: Has anyone scooped up a cargo canister in space with anything lower on the list than computers? The answer to this will depend on the version you have, I suspect. I've certainly scooped up ample alloys from time to time. How have other readers fared?

I am really stumped on this one: Matthew Salkeld is Dangerous, is in Galaxy Four and has the Electron version. What Matthew wants to know is whether or not his version has the Missions and Thargoids. My guess would be No to both questions, but can anyone give an answer based on experience?

Get the best with an

EMR Music System

Each year, EMR offers you a swinging Christmas with big discounts on some of the best music programs for the Archimedes and BBC - there's something for everyone, from after-dinner keyboard doodlers to party-piece performers - happy music-making!

SYSTEM 1: RHYTHMBOX *Complete Arc 8-tracker music machine for internal sounds - Price £28*

Features: ✓Step/Realtime bar "grid" recording ✓Superb sound set supplied ✓Easy editing ✓Every bar can change tempo or time signature, using 8 different sounds with own pan and level controls ✓Makes 8-part music, drums, effects
Suitable: Ages 7+. All abilities - guarantees musical results using simple mouse control - "click and hear"- fun to use too!
Hardware: Any Arc computer (at least 1Mb) + EMR connector (price £1.20) for output socket link to home stereo system
Optional extras: Creations, Sampler 8+SoundSynth, Dreamwave.

SYSTEM 2: MICROSTUDIO *Unique learning program for any Midi keyboard - Price only £74*

Features: ✓Teaches any music piece ✓24-track realtime recording ✓Instant "play and see music" during record/playback ✓Program talks to you ✓"Compose and hear" using mouse ✓Learn to read music ✓Auto lyrics input on screen ✓Dot-matrix printout of music parts/lyrics ✓Plays Midi/Internal sounds ✓Auto transpose pitch/key signature ✓Phrase Repeat
Suitable: Ages 8+. Piano beginners to advanced. Ideal for the whole family to enjoy. Nothing like it under £1500!
Hardware: Any Arc computer (1Mb+) + Midi keyboard + Acorn/EMR Midi Interface + (int sound use - connector £1.20)
Optional Extras: Creations, Sampler 8+SoundSynth, DreamWave, Maestro File Converter, Music Player, Orpheus, Scorewriter, Symphony and Modern Music library discs - these contain easy-play parts to learn as well as original parts.

SYSTEM 3: STUDIO 24 PLUS V2 *Unmatched home Midi/Video studio -Incredible value-£179*

Features: ✓24-track recording ✓Midi (up to 64 channels)/32 internal sound record/playback ✓Extensive editing pages ✓Instant notation display during record/playback ✓Unlimited patterns ✓Music parts (with lyrics) printout ✓Master keyboard ✓Video recorder link via SMPTE ✓Graphics control ✓Full merging, copy, transpose, quantising ✓Advanced filing of music, graphics, waveforms, arrangements ✓Upgradable ✓The main program in EMR's Arpeggio Music System
Suitable: Ages 12+. Can be used by anyone able to play music on a keyboard - from a pop song to a piano concerto. Recording/playback via Midi can be done immediately with the opportunity to explore an unrivalled range of features that put this program into the professional class for serious music composition and performance with graphics and video.
Hardware: Any Arc computer (1Mb+) + Midi instrument(s) + Acorn/EMR Midi Interface. Optional:SMPTE /video cards
Optional Extras: Creations sound sample discs, Sampler 8+SoundSynth, DreamWave, Maestro File Converter, Music Player, Orpheus, Scorewriter, Midi Analyser, VuMusic, Symphony and Modern Music library discs.

SYSTEM 4: SCOREWRITER PMS *High quality music DM printing at lowest cost - only £145*

Complete textual music typsetting system for printing individual parts and full scores in many formats - converts Studio 24 Plus V2 and MicroStudio files. Also available for Postscript Laser printers. Send for sample printouts and be amazed!

SYSTEM 5: PRO-SAMPLING *Complete package SOUNDSYNTH+SAMPLER 8 card only £120!*

ALSO

MUSIC PLAYER - Icon bar playback of EMR music files - true background music that never stops! - only £39
MAESTRO File Converter to S24V2/MStudio - £9 MIDI ANALYSER for S24V2 users - great utility - £28
DREAMWAVE 32 harmonic, 64 wave Arc synth - £39 STORYBOOK with sound/ pictures for young people - £49
SYMPHONY Demo disc 1 & Classical Music disc 2 (Grieg, Bach, Mozart etc), Xmas Music selection - £8 each
MODERN MUSIC LIBRARY discs 1 (Great Film Themes), 2 (Great Hits) etc. £15 each
ORPHEUS VOICE EDIT SUITE for various synths - each £29 + Master Editor £9
CREATIONS great sample sets on disc - only £8 each disc VUMUSIC I - Midi paint program - only £10

GREAT BBC MIDITRACK OFFERS

8-Track PERFORMER + MIDI INTERFACE + 2 MIDI CABLES - ONLY £99 SCOREWRITER SET £99
16-Track PRO-PERFORMER on ROM + MIDI INTERFACE + 2 CABLES - ONLY £120

Send for full info on Archimedes or BBC music products - Special offer! Saturday training courses booked now - only £35

All offers valid until December 31st 1990 only. Prices stated include VAT. Access/Visa accepted. UK postage: Add £2.50 P&P (total under £30: P&P £1) - Overseas: deduct 15% VAT, add £10 P&P airmail (total under £30: P&P £4). E&OE.

EMR ElectroMusic Research

EMR LTD (DEPT MU), 14 MOUNT CLOSE, WICKFORD, ESSEX SS11 8HG
TELEPHONE SALES & ENQUIRIES: 0702 335747 FAX: 0702 348406

Enjoy New Music Creativity With EMR!

Out of Exile

James Bonfield prepares the route for your escape from the ultimate arcade adventure

EXILE is, debatably, the best arcade adventure ever to appear on the BBC Micro. It has a vast, continuously scrolling landscape, full physical effects like mass and gravity, strange creatures and, on the Master, digitised sound effects. But it has also been one of the hardest games to complete.

But now we present the ultimate cheat for the ultimate game, it meshes seamlessly with the original game by providing an extra option on the main menu: F8 Toggle Cheat that switches the various cheats you have selected on or off.

All the other options function correctly – including the option to Run Game, which automatically selects the appropriate cheat for normal or sideways ram version.

So type in Listing I, ensure you've made no errors using the checksums, and save it. When it's run you must ensure that the value of TOP is less than &2C00. The most important trick is to ensure that you don't type in the spaces after each line number. You can check the value of TOP by typing:

```
PRINT ~TOP
```

If it is over the limit, delete other extra spaces, any REM statements and join lines together until it falls within the allowed value. The reason for this is that the save-game position starts at &2C00, so the program should not corrupt this area.

Used excessively the cheats make the game both too easy and, in some cases, impossible to complete, so they should be used with care when absolutely necessary. Remember that you can always return to the menu to toggle them on and off.

The cheats

Disable certain events: This is a widely varied cheat, its most useful feature being that you cannot be forced to teleport by dying and it prevents the gun turrets and robots from firing at you.

A wide range of other small events have also been stopped, including bees, monkeys, fires, birds and so on. However, this cheat should be used with care as the game is impossible to complete with it working, as certain necessary events no longer happen – such as the dispensing of power pods from certain places.

EXILE
SUPERIOR SOFTWARE
ACORNSOFT

Alter water level: This alters the level of the water with 255 at the bottom of the map, 0 at the top. Beware of using numbers too near the extremes. Not very useful really, but good for a laugh.

Make doors open and shut: This forces any door – including the portals – to continually open and shut. This makes it rather hard to get through some of the faster doors so, again, use with care. Its main use lies in getting through the portals which keys cannot unlock.

Set energy to full with function key: This puts the energy in any weapon or armour (F0 to F5) to full by simply pressing its corresponding function key.

Infinite energy: Much more subtle than the full energy cheat, this is less noticable but has much the same effect on game play.

The Mapper

Listing II may help if you are still having difficulties with Exile. Type it in, use the checksums to ensure it is free of typing errors and save it. Insert the original Exile disc and type RUN.

After loading up part of Exile the screen displays the start position – in the spaceship. Pressing the keys Z, X, * and / you can scroll around the landscape in the required direction. However this program uses the map from the menu, so it is slightly different from the proper map in a couple of places.

Listing II

```
   1 REM Exile Cheat
   2 REM by James Bonfield
   3 REM (c) The Micro User
  10 IF PAGE<>&1500 THEN PAGE=&1500:CHA
IN"EXCHEAT"
  20 ON ERROR MODE7:REPORT:PRINT" at li
ne ";ERL:END
  30 MODE7:PRINT'CHR$133"Do you wish to
 cheat ?";
  40 X$=GET$:PRINTX$
  50 IFINSTR("Nn",X$)THEN D$="N":W$="N"
:OS$="N":EF$="N":IE$="N":GOTO170
  60 PRINT'CHR$129"Disable certain even
ts (Y/N): ";
  70 D$=GET$:PRINTD$
  80 PRINTCHR$129"Alter level of water
(Y/N): ";
  90 W$=GET$:PRINTW$
 100 IFINSTR("Yy",W$)THENPRINT"   ";:PR
INTCHR$129;:INPUT"Enter level (0-255) :"
L
 110 PRINTCHR$129"Make doors open & shu
t (Y/N): ";
 120 OS$=GET$:PRINTOS$
 130 PRINTCHR$129"Full energy with func
. keys (Y/N): ";
 140 EF$=GET$:PRINTEF$
 150 PRINTCHR$129"Infinite energy (Y/N)
 :";
```

➤

EXILE
SUPERIOR SOFTWARE ACORNSOFT

➤

```
 160 IE$=GET$:PRINTIE$
 170 FORPASS=0TO2STEP2
 180 P%=&1100
 190 [OPTPASS
 200 .loadmc EQUS"LO. EXILEMC"+CHR$&0D
 210 .begin2
 220 EOR#&F2
 230 ADC&70
 240 ADC#&97
 250 STA&70
 260 .c
 270 EOR&3000,Y
 280 .d
 290 STA&3000,Y
 300 EOR&70
 310 INY
 320 BNEmore2
 330 INC&7998
 340 INC&799B
 350 INCc+2
 360 INCd+2
 370 PHA
 380 PHP
 390 LDAc+2
 400 CMP#&7F
 410 BEQout2
 420 PLP
 430 PLA
 440 RTS
 450 .more2
 460 JSRbegin2
 470 BNEbegin2
 480 .start2
 490 LDA#&23
 500 STA&70
 510 LDA#&78
 520 LDY#&0
 530 SEC
 540 SEI
 550 JMPbegin2
 560 .out2 JMP out6
 570 .sr
 580 LDX#0
 590 .loopsr
 600 LDArelsr,X
 610 STAz,X
 620 INX
 630 BNEloopsr
 640 \      SELECT CHEAT (B / MC)
 650 .z
 660 CPY#&39
 670 BEQsr
 680 \      EXILEB CHEAT
 690 LDX#textMOD256
 700 LDY#textDIV256
 710 JSR&FFF7
 720 JMPstart2
 730 .out3
 740 LDA#&EA
 750 STA&71B7
 760 STA&71B8
 770 STA&71B9
 780 ]
 790 IFINSTR("Yy",IE$)THEN[OPTPASS:STA&
3E8E:STA&3E9F:STA&3E90:]
 800 IFINSTR("Yy",W$)THEN[OPTPASS:STA&3
DCE:LDA#&A9:STA&3DCF:LDA#L:STA&3DD0:]
 810 [OPTPASS
 820 LDA#&60
 830 STA&4A5F
 840 ]
 850 IFINSTR("Yy",D$)THEN[OPTPASS:STA&3
687:]
 860 IFINSTR("Yy",OS$)THEN[OPTPASS:STA&
437F:]
 870 IFINSTR("Yy",EF$)THEN[OPTPASS:LDA#
&A9:STA&3DFA:LDA#&FF:STA&3DFB:LDA#&9D:ST
A&3DFC:LDA#&54:STA&3DFD:LDA#&8:STA&3DFE:
]
 880 [OPTPASS
 890 JMP&78ED
 900 .text EQUS"LO. EXILEB"+CHR$&0D
 910 .relsr
 920 \      EXILEMC CHEAT
 930 LDA#&19
 940 STAc+2
 950 STAd+2
 960 LDA#(nextbit-relsr+z)MOD256
 970 STAout2+1
 980 LDA#(nextbit-relsr+z)DIV256
 990 STAout2+2
1000 LDX#(loadsr-relsr+z)MOD256
1010 LDY#(loadsr-relsr+z)DIV256
1020 JSR&FFF7
1030 JMPstart2
1040 .nextbit
1050 LDA#(lmc-relsr+z)MOD256
1060 STA&1979
1070 LDA#(lmc-relsr+z)DIV256
1080 STA&197A
1090 JMP&1907
1100 .lmc
1110 LDX#loadmcMOD256
1120 LDY#loadmcDIV256
1130 JSR&FFF7
1140 LDA#&12
1150 STAc+2
1160 STAd+2
1170 LDA#(almost-relsr+z)MOD256
1180 STAout2+1
1190 LDA#(almost-relsr+z)DIV256
1200 STAout2+2
1210 LDA#&7A
1220 STAd+9
1230 LDA#&7D
1240 STAd+12
1250 ADC#1
1260 STAd+10
1270 STAd+13
1280 JMPstart2
1290 .almost
1300 LDA#&60
1310 STA&4AC6
1320 LDA#&EA
1330 STA&7640
1340 STA&7641
1350 STA&7642
1360 ]
1370 IFINSTR("Yy",IE$)THEN[OPTPASS:STA&
3EBD:STA&3EBE:STA&3EBF:]
1380 IFINSTR("Yy",W$)THEN[OPTPASS:STA&3
DFD:LDA#&A9:STA&3DFE:LDA#L:STA&3DFF:]
1390 [OPTPASS
1400 LDA#&60
1410 ]
1420 IFINSTR("Yy",D$)THEN[OPTPASS:STA&3
6B6:]
1430 IFINSTR("Yy",OS$)THEN[OPTPASS:STA&
43E6:]
1440 IFINSTR("Yy",EF$)THEN[OPTPASS:LDA#
&A9:STA&3E29:LDA#&FF:STA&3E2A:LDA#&9D:ST
A&3E2B:LDA#&54:STA&3E2C:LDA#&8:STA&3E2D:
]
1450 [OPTPASS
1460 JMP&7D78
1470 .loadsr EQUS"LO. EXILESR"+CHR$&0D
1480 .loadboot
1490 EQUS"LO. !BOOT"+CHR$&0D
1500 .exile_cheat
1510 LDX#loadbootMOD256
1520 LDY#loadbootDIV256
1530 JSR&FFF7
1540 .start
1550 LDX#&2C
1560 .a
1570 LDA&1F10
1580 .loop
1590 EOR&1F00,X
1600 STA&1F00,X
1610 INX
1620 BNEloop
1630 .loop2
1640 INC&1F13
1650 INCa+1
1660 LDA&1F13
1670 CMP#&2C
1680 BEQloop2
1690 CMP#0
1700 BNEstart
1710 LDA #&60:STA &1FDC:JSR &1F42
1720 LDA #&4C:STA &7877
1730 LDA #cont MOD 256:STA &7878
1740 LDA #cont DIV 256:STA &7879
1750 JMP &7800
1760 .cont
1770 LDX #hacker MOD 256
1780 LDY #hacker DIV 256
1790 JSR &FFF7
1800 JMP start2
1810 .out6
1820 LDA #&12:STA c+2:STA d+2
1830 LDA #out3 MOD 256:STA out2+1
1840 LDA #out3 DIV 256:STA out2+2
1850 LDA #&60:STA &758A
1860 JSR &74E1
1870 LDA #run_game MOD 256:STA &38BD
1880 LDA #&4C:STA &787E
1890 LDA #run_game DIV 256:STA &38BE
1900 LDX #&0
1910 .fudge
1920 LDA exlbits,X:STA &38DB,X
1930 INX:CPX #&0B
1940 BNE fudge
1950 LDA #toggle MOD 256:STA &38DD
1960 LDA #toggle DIV 256:STA &38DE
1970 LDA #do_toggle MOD 256:STA &38DB
1980 LDA #do_toggle DIV 256:STA &38DC
1990 LDA #&4C:STA &384A
2000 LDA #extra MOD 256:STA &384B
2010 LDA #extra DIV 256:STA &384C
2020 LDA #extra2 MOD 256:STA &3821
2030 LDA #extra2 DIV 256:STA &3822
2040 JMP &332F
2050 .do_toggle
2060 LDA tog_data
2070 CMP #0
2080 BEQ cheat_on
2090 LDA #&F7:STA &39F6
2100 LDA #&FF:STA &39F7
2110 LDA #0:STA tog_data
2120 JMP &3785
2130 .cheat_on
2140 LDA #z MOD 256:STA &39F6
2150 LDA #z DIV 256:STA &39F7
2160 LDA #1:STA tog_data
2170 JMP &3785
2180 .extra
```

SUBSCRIBE NOW!
If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*.

```
2190 JSR &32FA
2200 .extra2
2210 LDX #t1 MOD 256
2220 LDY #t1 DIV 256
2230 JSR &32FA
2240 LDA tog_data
2250 BEQ cheat_off
2260 LDX #ton MOD 256
2270 LDY #ton DIV 256
2280 JSR &32FA:JMP more
2290 .cheat_off
2300 LDX #toff MOD 256
2310 LDY #toff DIV 256
2320 JSR &32FA
2330 .more
2340 LDX #message MOD 256
2350 LDY #message DIV 256
2360 JSR &32FA
2370 JMP &384D
2380  .t1 EQUS CHR$13+CHR$&11+CHR$69+ST
RING$(40," ")+"Cheat "+CHR$0
2390 .ton EQUS "ON"+CHR$0
2400 .toff EQUS "OFF"+CHR$0
2410 .message EQUS CHR$&0D+CHR$&0A+CHR$
&0D+CHR$&0A+CHR$&11+CHR$99+STRING$(10,"
")+"Hacked by Jimbo"+CHR$0
2420 .run_game EQUS "Run Game"+CHR$0
2430 .toggle EQUS "Toggle cheat"+CHR$0
2440 .tog_data EQUB 0
2450 .exlbits
2460 EQUD &12091100:EQUD &FFFFFFFF:EQUB
&FF:EQUB &FF:EQUB &FF
2470 .hacker EQUS "*L. EXILEL"+CHR$&0D
2480 ]
2490 NEXT:MODE 7
2500 PRINT'''CHR$131"INSERT EXILE DISC
AND PRESS ANY KEY":X=GET
2510 CALLexile_cheat
```

Get it right ✓

```
   1 =    0 0
   2 =    0 0
   3 =    0 0
  10 = 82E4 4
  20 = BC2B E
  30 = 8719 8
  40 = 8907 3
  50 = 4188 A
  60 = 6974 3
  70 = E31A A
  80 = 16A6 2
  90 = 40FB 3
 100 = 41A3 C
 110 = 1F4F 4
 120 = 146A A
 130 = B9C9 9
 140 = 9FDE A
 150 = EED6 8
 160 = 75D6 8
 170 = 4A5B A
 180 = E3C5 F
 190 = C8B2 7
 200 =  B49 F
 210 = 819C 6
 220 = 4FDC 5
 230 = DCA9 0
 240 = 97CB 7
 250 = A45F 6
 260 = 792C F
 270 = 316D B
 280 =  9CB F
 290 = 35C2 0
 300 = AE67 1
 310 = 6623 7
 320 = 5E3F 2
 330 =  FDA 1
 340 = D007 D
 350 =  744 A
 360 = 82D4 A
 370 = 824E 5
 380 = 805E F
 390 = EF83 9
 400 = 18FB E
 410 = 4735 5
 420 = 4C9A 0
 430 = 4E8A 8
 440 = 9843 F
 450 = 5497 1
 460 = E4C6 F
 470 = 88D6 C
 480 =  800 6
 490 = A53C 3
 500 = A45F E
 510 = EBA2 8
 520 = 3A54 B
 530 = 8D00 5
 540 = 2C4A 9
 550 = 2780 4
 560 = 7BA6 0
 570 = 9E18 3
 580 = ACA7 F
 590 = 224B A
 600 = 7A8A 4
 610 = BDD7 9
 620 = 7602 D
 630 = 2B01 8
 640 =    0 8
 650 = FA34 E
 660 = A7FC 6
 670 = ED13 8
 680 =    0 8
 690 = 1087 9
 700 = 92AA 2
 710 = 6C8A B
 720 = AE1C F
 730 = BB75 0
 740 = 6A27 7
 750 = 608A 1
 760 = 9165 5
 770 = 8144 1
 780 = 8B58 D
 790 = 1677 A
 800 = 1FF7 F
 810 = C8B2 5
 820 = 599B B
 830 = DC26 E
 840 = 8B58 6
 850 = 262B 7
 860 = 45FA 8
 870 = A24B 2
 880 = C8B2 6
 890 =  E56 3
 900 = 8481 E
 910 = E4EC F
 920 =    0 F
 930 = 5125 5
 940 = 345E E
 950 = B1CE A
 960 = F323 2
 970 = FB02 5
 980 = 1E4B 2
 990 = CB61 2
1000 = 7B45 A
1010 = FBF5 D
1020 = 6C8A 5
1030 = AE1C 5
1040 = 9577 0
1050 = DD60 5
1060 = F8D0 6
1070 = 3008 A
1080 =  74F 5
1090 = A7A7 8
1100 = 5AAD 2
1110 = 921A 8
1120 = 7C07 4
1130 = 6C8A 9
1140 = E04E D
1150 = 345E 7
1160 = B1CE 4
1170 = C503 4
1180 = FB02 1
1190 = 286B 2
1200 = CB61 2
1210 =  41C 7
1220 =   A5 6
1230 = 54B9 3
1240 = 3AB8 1
1250 = 2E6E C
1260 = 1AFA E
1270 = 2A99 3
1280 = AE1C 3
1290 = 6026 1
1300 = 599B 1
1310 =   4E 0
1320 = 6A27 4
1330 = 3702 9
1340 = 2723 C
1350 = 1740 4
1360 = 8B58 E
1370 = D28D A
1380 = E535 9
1390 = C8B2 F
1400 = 599B 4
1410 = 8B58 D
1420 = 3BC5 9
1430 = 32EF B
1440 = BC0C F
1450 = C8B2 F
1460 = 721F 1
1470 = CB19 0
1480 = DDF2 2
1490 = 7ED3 D
1500 =  80D 9
1510 = BC10 9
1520 = 2A19 1
1530 = 6C8A 4
1540 = 3208 2
1550 = 778D 2
1560 = 596E 2
1570 = E46B 5
1580 =  325 4
1590 = 7A0F A
1600 = 7EA0 3
1610 = 7602 B
1620 = A1BA D
1630 =  372 9
1640 = E4B8 3
1650 = 5947 4
1660 = D408 0
1670 = B7AB 1
1680 = 5ED0 2
1690 = 9388 E
1700 = 38A0 B
1710 = 309A F
1720 = 2055 5
1730 = 2B20 0
1740 = 76D8 0
1750 = 285D B
1760 = A47E 4
1770 = FCBA 7
1780 = 16C5 E
1790 = CECB 3
1800 = 16DD 7
1810 = EBD0 D
1820 = 4DE9 8
1830 = 6A6B E
1840 = 1A61 4
1850 = A9E9 6
1860 = 79F7 5
1870 = C702 E
1880 = 7E80 4
1890 = 9AFA 4
1900 = 86E2 3
1910 = 76D7 6
1920 = 53ED 9
1930 = 31D8 3
1940 = A340 E
1950 = 4434 D
1960 = 19CC F
1970 = 8ABF D
1980 = D747 7
1990 = A1A6 C
2000 = F3C7 8
2010 = AE3F D
2020 = E9A3 D
2030 = 9419 4
2040 = 6A6E 1
2050 =  B6F F
2060 = 826F B
2070 =  2F9 B
2080 = 9EAD A
2090 = 9E52 7
2100 = EDA8 B
2110 = 5037 2
2120 = 1791 A
2130 = 7262 3
2140 = 6101 5
2150 = 3CF9 A
2160 = 2B56 C
2170 = 1791 D
2180 = 5EE2 2
2190 = 2A62 5
2200 = 4F2A 7
2210 = 1399 F
2220 = 8F53 B
2230 = 2A62 3
2240 = 826F 0
2250 = 4ABE 0
2260 = 9AA4 0
2270 = DD52 D
2280 = FCBC 1
2290 = B91C 8
2300 = 7F07 2
2310 = 7EE7 0
2320 = 2A62 C
2330 = 422A A
2340 = 8420 0
2350 = 6887 3
2360 = 2A62 B
2370 = 107B 2
2380 = 5E86 9
2390 = CA03 5
2400 = AEFC B
2410 = 4EBC 8
2420 = ED3D E
2430 = EB03 D
2440 = 8836 8
2450 = CEC4 0
2460 = 8835 C
2470 = A403 F
2480 = 8B58 F
2490 = 4EA6 A
2500 = 5658 6
2510 = 3DB4 2
```

Listing II

```
   1 REM Exile Mapper
   2 REM by James Bonfield
   3 REM (c) The Micro User
  10 ON ERROR MODE7:REPORT:PRINT" at li
ne ";ERL:END
  20 FORPASS=0TO2STEP2
  30 P%=&1100
  40 [OPTPASS
  50 .begin2
  60 EOR#&F2
  70 ADC&70
  80 ADC#&97
  90 STA&70
 100 .c
 110 EOR&3000,Y
 120 .d
 130 STA&3000,Y
 140 EOR&70
 150 INY
 160 BNEmore2
 170 INC&7998
 180 INC&799B
 190 INCc+2
 200 INCd+2
 210 PHA
 220 PHP
 230 LDAc+2
 240 CMP#&7F
 250 BEQout2
 260 PLP
 270 PLA
 280 RTS
 290 .more2
 300 JSRbegin2
 310 BNEbegin2
 320 .start2
 330 LDA#&23
 340 STA&70
 350 LDA#&78
 360 LDY#&0
 370 SEC
 380 SEI
 390 JMPbegin2
 400 .out2 JMP out6
 410 .loadboot
 420 EQUS"LO. !BOOT"+CHR$&0D
 430 .exile_cheat
 440 LDX#loadbootMOD256
 450 LDY#loadbootDIV256
 460 JSR&FFF7
 470 .start
 480 LDX#&2C
 490 .a
 500 LDA&1F10
 510 .loop
 520 EOR&1F00,X
 530 STA&1F00,X
 540 INX
 550 BNEloop
 560 .loop2
 570 INC&1F13
 580 INCa+1
 590 LDA&1F13
 600 CMP#&2C
 610 BEQloop2
 620 CMP#0
 630 BNEstart
 640 LDA #&60:STA &1FDC:JSR &1F42
 650 LDA #&4C:STA &7877
 660 LDA #cont MOD 256:STA &7878
 670 LDA #cont DIV 256:STA &7879
 680 JMP &7800
 690 .cont
 700 LDX #hacker MOD 256
 710 LDY #hacker DIV 256
 720 JSR &FFF7
 730 JMP start2
 740 .out6
 750 LDA #&60:STA &758A
 760 JSR &74E1
 770 JMP start2
 780 .out6
 790 LDA #&60:STA &758A
 800 JSR &74E1
 810 LDX #0
 820 .mvloop
 830 LDA &1300,X:STA &3381,X
 840 INX
 850 CPX #&58:BNE mvloop
 860 JMP &3381
 870 .hacker EQUS "*L. EXILEL"+CHR$&0D
 880 ]
 890 NEXT
 900 FOR PASS=0 TO 2 STEP 2
 910 P%=&3381
 920 [OPT PASS
 930 JSR &2E52
 940 JMPstart
 950 .draw
 960 JSR&2EEA
 970 JSR&2F80
 980 .x
 990 LDA #&9B:STA &18
1000 .y
1010 LDA #&3B:STA &1A
1020 JSR&2152
1030 JSR&1DBE
1040 JSR&2445
1050 RTS
1060 .start
```

➤

EXILE
SUPERIOR SOFTWARE ACORNSOFT

➤

```
1070 JSR draw
1080 .loop
1090 JSR &FFE0
1100 PHA
1110 LDA#15:LDX #0:JSR &FFF4
1120 PLA
1130 CMP #90
1140 BEQ left
1150 CMP #88
1160 BEQ right
1170 CMP #58
1180 BEQ up
1190 CMP #47
1200 BEQ down
1210 JMP loop
1220 .right
1230 INC x+1
1240 JMP start
1250 .left
1260 DEC x+1
1270 JMP start
1280 .up
1290 DEC y+1
1300 JMP start
1310 .down
1320 INC y+1
1330 JMP start
1340 ]
1350 NEXT
1360 FOR I=&3381 TO P% STEP 4:!(I-&3381
+&1300)=!I:NEXT
1370 MODE 7:PRINT TAB(5,10)CHR$131;"PLE
ASE INSERT EXILE DISC"
1380 X=GET
1390 CALLexile_cheat
```

Get it right ✓

```
   1 =    0 0 | 220 = 805E 3 | 460 = 6C8A 5 | 700 = FCBA C |  940 = A77D A | 1180 = DF1D B
   2 =    0 0 | 230 = EF83 E | 470 = 3208 D | 710 = 16C5 4 |  950 = D43C B | 1190 = 5332 6
   3 =    0 0 | 240 = 18FB 1 | 480 = 778D E | 720 = CECB 9 |  960 = F65C 1 | 1200 = D862 3
  10 = BC2B B | 250 = 4735 A | 490 = 596E F | 730 = 16DD 3 |  970 = BFBF 2 | 1210 = EC53 2
  20 = 4A5B 6 | 260 = 4C9A 4 | 500 = E46B 0 | 740 = EBD0 C |  980 = DA76 B | 1220 = E460 0
  30 = E3C5 C | 270 = 4EBA 8 | 510 =  325 C | 750 = A9E9 3 |  990 = 5A86 3 | 1230 = 59A0 9
  40 = C8B2 1 | 280 = 9843 6 | 520 = 7A0F 1 | 760 = 79F7 9 | 1000 = CA57 B | 1240 = 48C9 B
  50 = 819C F | 290 = 5497 0 | 530 = 7EA0 7 | 770 = 16DD 0 | 1010 = 21F9 9 | 1250 = 3EF8 3
  60 = 4FDC 2 | 300 = E4C6 5 | 540 = 7602 0 | 780 = EBD0 F | 1020 = B439 C | 1260 = 7008 B
  70 = DCA9 A | 310 = 88D6 C | 550 = A1BA 1 | 790 = A9E9 F | 1030 = 83A3 D | 1270 = 48C9 1
  80 = 97CB 8 | 320 =  800 5 | 560 =  372 D | 800 = 79F7 5 | 1040 = 1C1F 2 | 1280 = 14FC D
  90 = A45F A | 330 = A53C D | 570 = E4B8 D | 810 = EA45 8 | 1050 = 9843 4 | 1290 = 4738 E
 100 = 792C B | 340 = A45F B | 580 = 5947 7 | 820 = 591F 8 | 1060 = 3208 8 | 1300 = 48C9 C
 110 = 316D 5 | 350 = EBA2 F | 590 = D408 1 | 830 = 8B23 1 | 1070 = B5F9 2 | 1310 = FFC3 A
 120 =  9CB B | 360 = 3A54 1 | 600 = B7AB F | 840 = 7602 E | 1080 =  325 7 | 1320 = 6E90 9
 130 = 35C2 6 | 370 = 8D00 C | 610 = 5ED0 A | 850 = 647B 2 | 1090 = EB7F 8 | 1330 = 48C9 0
 140 = AE67 E | 380 = 2C4A 3 | 620 = 9388 0 | 860 = 8BD5 9 | 1100 = 824E 5 | 1340 = 8B58 1
 150 = 6623 7 | 390 = 2780 6 | 630 = 38A0 E | 870 = A403 9 | 1110 = B09A C | 1350 = 2C83 8
 160 = 5E3F B | 400 = 7BA6 0 | 640 = 309A 6 | 880 = 8B58 A | 1120 = 4E8A D | 1360 = 1FFB A
 170 =  FDA F | 410 = DDF2 6 | 650 = 2055 3 | 890 = 2C83 0 | 1130 = 5589 E | 1370 = 8772 A
 180 = D007 7 | 420 = 7ED3 6 | 660 = 2B20 5 | 900 = C046 4 | 1140 = 1959 E | 1380 = 61E9 3
 190 =  744 F | 430 =  80D C | 670 = 76D8 2 | 910 = F945 3 | 1150 = E7B0 B | 1390 = 3DB4 B
 200 = 82D4 F | 440 = BC10 6 | 680 = 285D 6 | 920 = DD44 2 | 1160 = 11E5 6 |
 210 = 824E B | 450 = 2A19 1 | 690 = A47E F | 930 = 12B0 3 | 1170 = 91EC 3 |
```

JOIN EUROPES BIGGEST ADVENTURE CLUB

OFFICIAL SECRETS

FOR ADVENTURES AND ROLE PLAYING AND MORE

Special Archimedes membership offer

Including The Pawn, Guild of Thieves, Corruption or Fish! *by Magnetic Scrolls*

£29.99

Annual Membership includes:

- *Confidential (6 issues).* Our 32 page bi-monthly magazine is essential reading for those interested in adventures or role playing games. Written by experts, *Confidential* has covered everything from How to Host a Murder to Which F16 Flight Simulator? Our agents, led by the Master Spy known as "The Boss Upstairs", seek out the secrets of RPG's, FRP's, MUG's, PBM's, Leisure Suit Larry, The Russians, Elvira..... and more.
- *The Pawn, The Guild of Thieves, Corruption, Fish! (rrp 29.99 each)* Choose any one of these brilliant Magnetic Scrolls games. Guild of Thieves - voted Game of the Year at the 1987 BMCA.
- *Help-Line.* We can help you solve most adventures and RPG's.
- *Special Reserve* membership (normally £5.00). Our other club gives you a bi-monthly NRG Colour Futuristic Cyberzine and big discounts on software and peripherals.

Micro User said of *The Pawn + The Guild of Thieves* "I have been longing to see these two award winning adventures in Archimedes format.... The illustrations exploit the graphic cababilities of the Archimedes as no other software house has yet done"

Presentation ...10
Atmosphere 10
Graphics 10
Value for money 10
Overall 10

SALES LINES
0279 600204

Also: BEST GAMES, BEST PRICES, BEST SERVICE. THAT'S WHY OVER 20,000 PEOPLE HAVE ALREADY JOINED OUR CLUBS.

The Guild of Thieves

***ARCHIMEDES* 3.5" Disk Software**

ADVENTURE COMPILATION	17.49
ANCESTRY (GENEALOGY PACKAGE)	49.99
APOCALYPSE	20.99
ARCADE SOCCER	14.99
ATELLER (ART PACKAGE)	61.49
AVON (TEXT)	13.99
BATTLE TANK	11.99
CASINO	14.99
CORRUPTION (M/SCROLLS)	17.99
E-TYPE (3D CAR RACING)	14.99
E-TYPE DESIGNER	12.49
EASI-WORK (WP)	27.49
FISH! (M/SCROLLS)	17.99
FREDDY'S FOLLY	11.99
FREEDOM FIGHTER	17.99
GUILD OF THIEVES (M/SCROLLS)	17.99
HOLED OUT (3D GOLF)	14.99
HOLED OUT DESIGNER	14.99
HOME ACCOUNTS	33.49
HOVERBOD	11.99
IBIX THE VIKING	14.99
JET FIGHTER (MINERVA)	11.99
MAN AT ARMS	14.99
MANCHESTER UNITED	16.49
MINOTAUR	11.99
MISSILE CONTROL	11.99
NEVRYON	14.99
ORION	11.99
PAWN (M/SCROLLS)	17.99
PIPEMANIA	16.49
REPTON 3	14.49
ROTOR	16.49
SPORTING TRIANGLES	16.49
TALISMAN	14.99
THE OLYMPICS	14.99
THUNDERMONK	11.99
TRIVIAL PURSUIT	20.49
U.I.M (3D ACTION ADVENTURE)	20.99
WHITE MAGIC 2 (ARCADE ADVENTURE)	14.99
WORLD CLASS LEADERBOARD	21.49

WE SELL TO MEMBERS ONLY. RECEIPTS ARE SENT FOR ALL ORDERS RECEIVED.
Special Reserve & Official Secrets are trading names of Inter-Mediates Ltd. Reg. Office: 2 South Block, The Maltings, Sawbridgeworth, Herts CM21 9PG. Registered in England No. 2054713. VAT reg. no. 424 8532 51

MEMBERSHIP AND ORDER FORM

(PLEASE PRINT IN BLOCK CAPITALS)

Name & Address ____________________
____
____

Post Code ____________ Tel. ____________

Computer ____________ *5.25"/*3.5"/*3.0"/*TAPE

Payable to:

Official Secrets
P.O. Box 847, Harlow, CM21 9PH

Official Secrets £29.99 UK, £34 EEC, £38 World

Tick the game of your choice The Pawn ☐ Corruption ☐ Guild of Thieves ☐ Fish! ☐ ARCHIE 2

PLEASE ENTER MEMBERSHIP FEE £

Item ____________ £

Item ____________ £

Software is available at reduced prices, please send SAE for details. For blank disks and Solution books please add 10% EEC or 25% World. Overseas orders must be paid by credit card. £

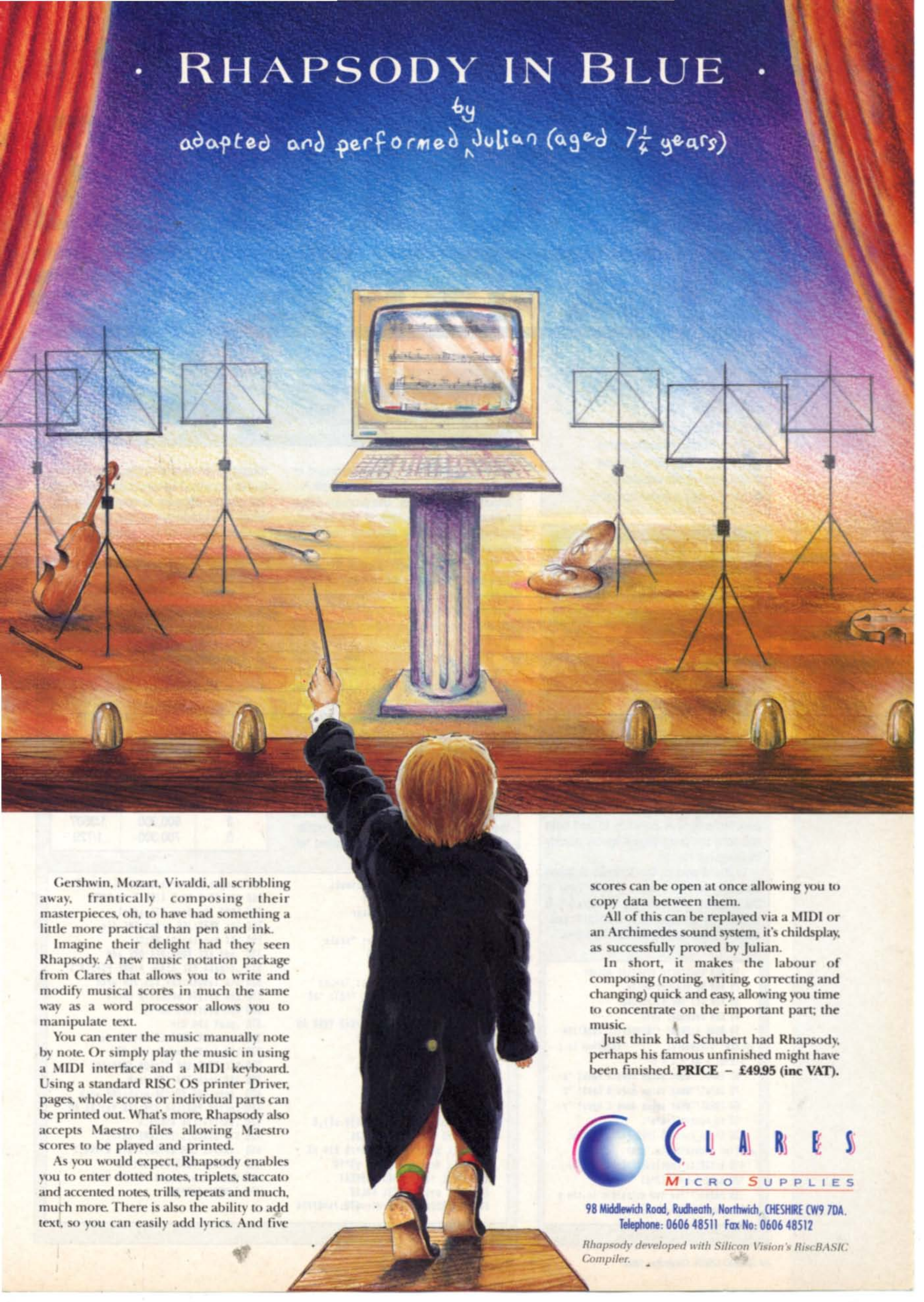
☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Credit card expiry date ____________

*CHEQUE/*POSTAL ORDER/*ACCESS/*VISA

· RHAPSODY IN BLUE ·

adapted and performed by Julian (aged 7¼ years)



Gershwin, Mozart, Vivaldi, all scribbling away, frantically composing their masterpieces, oh, to have had something a little more practical than pen and ink.

Imagine their delight had they seen Rhapsody. A new music notation package from Clares that allows you to write and modify musical scores in much the same way as a word processor allows you to manipulate text.

You can enter the music manually note by note. Or simply play the music in using a MIDI interface and a MIDI keyboard. Using a standard RISC OS printer Driver, pages, whole scores or individual parts can be printed out. What's more, Rhapsody also accepts Maestro files allowing Maestro scores to be played and printed.

As you would expect, Rhapsody enables you to enter dotted notes, triplets, staccato and accented notes, trills, repeats and much, much more. There is also the ability to add text, so you can easily add lyrics. And five scores can be open at once allowing you to copy data between them.

All of this can be replayed via a MIDI or an Archimedes sound system, it's childsplay, as successfully proved by Julian.

In short, it makes the labour of composing (noting, writing, correcting and changing) quick and easy, allowing you time to concentrate on the important part; the music.

Just think had Schubert had Rhapsody, perhaps his famous unfinished might have been finished. **PRICE – £49.95 (inc VAT).**

CLARES
MICRO SUPPLIES

98 Middlewich Road, Rudheath, Northwich, CHESHIRE CW9 7DA.
Telephone: 0606 48511 Fax No: 0606 48512

Rhapsody developed with Silicon Vision's RiscBASIC Compiler.

ROUTINE MATTERS

This month featuring routines to...

- Add *Date to the Master
- Produce fascinating patterns
- Identify which micro is in use
- Solve quadratic equations
- Let you play a guessing game

Solving quadratics

Author : Frances White
Language : Basic
Filename : QuadSol

STUDENTS often find it more difficult to solve quadratic equations than general equations, because as well as having an unknown quantity, they incorporate the unknown quantity squared.

The usual method of finding the solutions is by graphing values resulting from trials on the equation, followed by a decimal search to find a more accurate figure. This is both time consuming and tedious, and often leads to inaccuracies.

However, by using a standard, complex formula, it is possible to find both solutions to 10 significant figures quickly by using our micros.

In the program, the formula is taken as being **A(x*x) + Bx + C = 0**. Type in the program and enter the values of A, B and C and, as long as a solution is possible, the two values will be displayed.

```
   10 REM Quadratic equation solver
   20 REM by Frances White
   30 REM (c) The Micro User
   40 REM December 1990
   50 MODE 6:PRINT '"QUADRATIC EQUATION
SOLVER"'STRING$(25,"-")'''"Equation is :
  A(x*x) + Bx + C = 0"''
   60 INPUT'"What value does A have? "a
   70 INPUT'"What value does B have? "b
   80 INPUT'"What value does C have? "c
   90 to_root=b^2-4*a*c
  100 IF to_root<=0 THEN PRINT ''"Real
olution unobtainable.":END
  110 k=SQR(to_root):sol1=(-b+k)/(2*a)
  120 sol2=(-b-k)/(2*a)
  130 PRINT''"The two solutions to the p
roblem are"';sol1;" and ";sol2'
```

Pattern Happy

Author : Jonathan Hart   Language : Basic/6502 code   Filename : DecPats

MATHEMATICS can usually be found at the root of most computing applications, especially for graphs. The program listed below takes a new look at this subject, using the numerals resulting from long division as its parameters.

First you are asked to enter the scale size of the pattern – the number of Mode 4 pixels which each single unit is to cover. Then the initial graphics x and y co-ordinates are requested, followed by the fraction to use.

The fraction is entered in the format of *1/x* where x can be any value you wish. You will find that in most cases those fractions which relate to decimals containing several recurring figures will produce the most interesting patterns.

To draw a pattern on the screen, the fraction is converted to a decimal using long division, then displayed using this rule: Each digit is taken in turn and a line with a length of that many units is drawn, the exact length depending on the scale.

After this, the cursor is rotated left through a 90 degree angle. This process is then repeated continuously – although the display appears to come to an end when the numerals in the decimal all become zeros, or the pattern repeats itself.

For example, if we used the fraction 1/16, the decimal equivalent would be 0.0625, the overall display format being:

- Turn left through 90 degrees.
- Draw a line six units long.
- Turn left through 90 degrees.
- Draw a line two units long.
- Turn left through 90 degrees.
- Draw a line five units long.

Four good examples of how the recurring nature of a decimal can produce interesting patterns are:

Scale	Initial x,y	Fraction
1	600,400	1/973
2	300,500	1/5352
2	900,300	1/3507
3	700,300	1/729

```
 10 REM Patterns from decimals
 20 REM by Jonathan Hart
 30 REM (c) The Micro User
 40 REM December 1990
 50 MODE 4:INPUT "Scale: "scale
 60 IF scale>20 THEN 50
 70 PROCassemble
 80 INPUT "Start co-ords: "ox,oy
 90 INPUT "Fraction (eg: 1/2): "a$
100 CLS:VDU 23,1,0;0;0;0;
110 i%=INSTR(a$,"/"):IF i%=0 THEN 90
120 r%=VAL LEFT$(a$,i%-1)
130 x%=VAL MID$(a$,i%+1)
140 IF r%>=10*x% THEN 140
150 $&700="Key 1 "+a$
160 X%=0:Y%=7:CALL cli
170 ?dir=0:MOVE ox,oy
180 VDU 31,39,0,&30+(r% DIV x%),8
190 r%=r% MOD x%*10:A%=&2E
200 CALL print:REPEAT:A%=r% DIV x%
210 CALL draw:r%=r% MOD x%*10
220 UNTIL r%=0:A%=&30:REPEAT
230 CALL print:UNTIL FALSE
240 DEFPROCassemble:dir=&70:fx=&FFF4
250 length=&71:wrch=&FFEE:cli=&FFF7
260 FOR I%=0 TO 2 STEP 2:P%=&900
270 [OPT I%:.draw STA add+1
280 ORA #&30:JSR print:INC dir
290 LDX #scale:LDA #0:CLC
300 .add ADC #&00:DEX:BNE add
310 .times4 ASL A:ASL A:BNE P%+3:RTS
320 STA length:LDA #25:JSR wrch
330 LDA #1:JSR wrch:STA eor+1
340 JSR plot:DEC eor+1
350 .plot LDA dir
360 .eor EOR #&00:LSR A:BCC zero
370 LSR A:LDA length:LDY #0
380 BCC P%+7:SBC #1:EOR #&FF:DEY
390 JSR wrch:TYA:JMP wrch
400 .zero LDA #0:JSR wrch:JMP wrch
410 .print PHA:LDA #19:JSR fx:LDX #0
420 .shift1:LDA &5808,X
430 STA &5800,X:INX:BNE shift1
440 .shift2 LDA &5908,X:STA &5900,X
450 INX:CPX #&38:BCC shift2
460 PLA:JSR wrch:LDA #8:JMP wrch
470 ]:NEXT:ENDPROC
```

Another selection of your handy routines brought together by Stephen Wade

Guessing game

Author : Julia Siddon
Language : Basic
Filename : GuessGm

MANY programmers believe a computer game cannot be any good unless it is at least 10k long. Not true, as the listing below shows.

The object of the game is to guess the number which your micro has thought of. This can be anything between 1 and the maximum value which you are asked to enter – this needs to be a minimum of 50.

It is not as easy as it first seems because all you are told is whether the answer is higher or lower than your last guess, that is until you (eventually) get it right. When you do, your micro will tell you how many attempts you took to do so.

The random number generator is re-seeded from the *TIME* variable each time the program is run, in an attempt to keep the target number as random as possible.

```
   10 REM Number guessing game
   20 REM by Julia Siddon
   30 REM (c) The Micro User
   40 REM December 1990
   50 MODE 7:seed=RND(-TIME):PRINT "Numb
er guessing game   by Julia Siddon"''
   60 REPEAT:INPUT "Top of number range
(must be 50 or more): "max%:IF max%=0 TH
EN END ELSE UNTIL max%>49
   70 number=RND(max%):CLS:PRINT "Number
 guessing game   by Julia Siddon"'''"I h
ave thought of a number between 1 and";m
ax%;". All you have to do is guess it.":
trys=1:REPEAT
   80 REPEAT:INPUT '"Enter your guess: "
guess%:UNTIL guess%>=1 AND guess%<=max%
   90 IF guess%=number THEN PRINT '"CORR
ECT!"'"You needed ";trys;" attempts."''"
Press any key for another go.....":REPEA
T UNTIL GET:RUN
  100 IF guess%<number THEN PRINT '"It i
s higher than that." ELSE PRINT '"It is
lower than that."
  110 trys=trys+1:UNTIL 0
```

Monthly cassette and disc

All of this month's routines can be found on the monthly subscription disc and cassette. On the 5.25" disc the programs reside in the "R" directory, and on the 3.5" disc in the "RoutMats" directory.

Those routines designed to work on the Archimedes series and A3000 micros are already file-typed on the 3.5" disc for your benefit – they are the ones without a blank icon when viewed at in the desktop environment.

Micro identifier

Author : Jim Maguire
Language : Basic
Filename : MicrChk

IT is often useful to be able to identify which of the numerous Acorn micros your program is running on. Some of the top commercial games over the past few years have carried special enhanced versions for Master users as well as the standard one, these having to check automatically which version needs to run.

The various versions of the operating system all carry a different identification code – which can be read by INKEY-256 – which in turn allows us to decipher which of the micros our program is running on.

When the program below is run you will get a message stating which type of micro you are using. This is done by reading the INKEY-256 code, and then comparing it to those listed in the data statements, the appropriate message being displayed.

```
   10 REM Micro model checker
   20 REM by Jim Maguire
   30 REM (c) The Micro User
   40 REM December 1990
   50 PROCgetcode:REPEAT
   60 READ code%,micro$:IF comp%=code% T
HEN PRINT "This is a ";micro$:END ELSE I
F code%=256 THEN PRINT micro$:END
   70 UNTIL 0
   80 DEFPROCgetcode
   90 comp%=INKEY(-256):ENDPROC
  100 DATA 0,BBC Micro MOS 0.10
  110 DATA 1,Acorn Electron MOS 1.00
  120 DATA 160,Archimedes (Arthur)
  130 DATA 161,Archimedes (RiscOS)
  140 DATA 244,BBC Master 128 MOS 3.26
  150 DATA 251,BBC Model B+ MOS 2.00
  160 DATA 252,BBC Micro German MOS
  170 DATA 253,BBC Master 128 MOS 3.20
  180 DATA 254,BBC Micro MOS 1.00/1.10
  190 DATA 255,BBC Micro MOS 1.00/1.20
  200 DATA 256,Micro unrecognised!
```

If you have written a routine that may be of interest to other readers, and suitable for publication in this column, do not hesitate in sending it on disc or tape along with documentation to:

Stephen Wade, Routine Matters,
The Micro User, Europa House,
Adlington Park,
Macclesfield SK10 4NP

Don't forget to tell us your name, address and telephone number, and enclose a stamped addressed envelope to guarantee the return of your media. Also provide us with a declaration stating that the routine is all your own work, has not been submitted elsewhere, and that we have your permission to use it.

Dating with a Master

Author : Henry Brooks
Language : 6502 code
Filename :Data

ONE of the major enhancements of the Master series over the original BBC Micro is the built-in real-time clock. By using the **Time* command, we can find out the current day, date and time.

However, in some applications we may only want part of this information – for example the date for automatic insertion into a letter.

Within the Basic environment this is not too difficult to achieve – instead of **Time* we can use the *TIME$* function to read the string, extracting only the necessary parts.

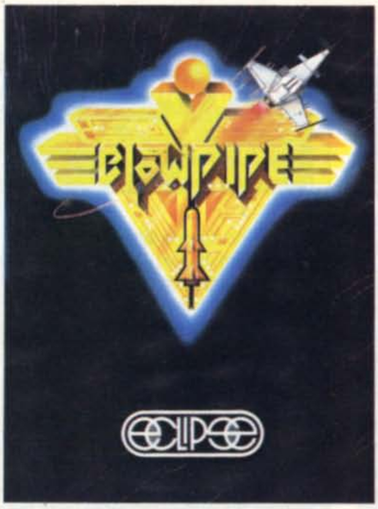
It's not quite so straightforward In non-Basic languages and machine code because the *TIME$* function is not present, and **Time* can only be used to read and print up the entire string in one go. What we need is a new command – **Date* – which prints up only the relevant information.

The operating system command Osword 14 with XY set to function 0 will get this data. It reads a parameter block of 25 characters – the full string followed by a carriage return marker. We are concerned with bytes 4 to 14.

The short listing below assembles a piece of machine code to do just this, automatically saving it under the filename of *Date* in the currently selected directory. Subsequently using **Date* at the appropriate moment produces the desired result.

More details on the different formats of the Osword 14 (read CMOS clock) and Osword 15 (write CMOS clock) calls can be found on pages D.3-22 to D.3-25 of the Master Reference Manual Part One.

```
   10 REM *DATE for Master 128
   20 REM by Henry Brooks
   30 REM (c) The Micro User
   40 REM December 1990
   50 MODE 7:osword=&FFF1:oswrch=&FFEE:o
snewl=&FFE7:FOR L%=0 TO 3 STEP 3
   60 P%=&900:[OPT L%
   70 LDA #14:LDX #block MOD 256
   80 LDY #block DIV 256:JSR osword
   90 LDY #4:.loop:LDA block,Y
  100 JSR oswrch:INY:CPY #15:BEQ nomore
  110 JMP loop:.nomore:JSR osnewl:RTS
  120 .block:EQUS STRING$(25,CHR$(0))
  130 ]:NEXT:OSCLI "SAVE $.Date 900 "+ST
R$~P%
```

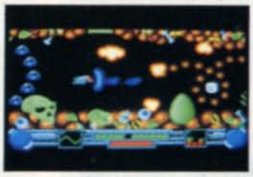


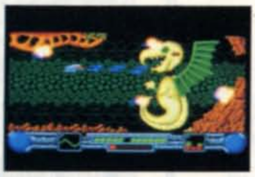
BLOWPIPE

Five levels of alien warfare lie before you – the most devilishly ingenious terra incognita you have ever faced awaits you, determined to question your genius and cause your downfall – can you keep ahead of this masterpiece of technical wizardry – conquer hitherto uncharted, undreamed of heights?

At the controls of the top specification ship, **The Annihilator**, you must establish a strategy to survive each level and collect as many credits as possible to use in the trading posts en route where you can equip your ship with even more powerful weaponry.

At the end of each stage, a fiendishly gruesome arch-guardian will try to check your progress through the portal to the next level – get it before it gets you and revel in your cunning.





Blowpipe is a masterpiece of Archimedes games' coding with over 2.5 megabytes of 256 colour graphics with up to 64 sprites on screen simultaneously. Over fifteen separate pieces of 4 channel stereo music with stunningly realistic sound effects heighten the excitement – explosive, mind-blowing, meteoric mega-action, all compressed onto just two discs.

WORLDSCAPE

Can you rectify world devastation? **Worldscape** affords you the opportunity to try, combining man's knowledge with your own ingenuity.

The fine balance of the planet Earth has been maintained by natural phenomena however catastrophic – volcanic eruption, earthquakes, tidal waves, plagues – but crucially, in the three hundred years since the Industrial Revolution, the human race has caused the global problems facing us today:

Atmospheric pollution caused by industrial gases

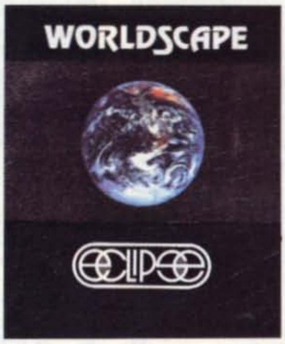
The hole in the ozone layer due to excessive use of CFC's

The "greenhouse" effect brought about by thoughtless and ill-considered deforestation.

Unless we act NOW, our legacy to future generations will be irreversible.

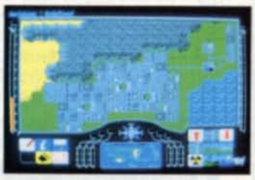
Can you improve on present-day thinking? **Worldscape** gives you the opportunity to try – use its built-in landscape generator to create totally unique landscapes – build cities, erect power stations, deal with sewage, plant your own forests – these and countless other options are available to you.

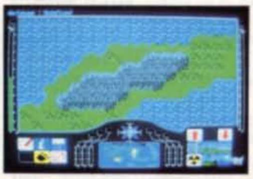
Remember you hold the advantage over scientists in the real world – you can correct your errors – mankind rarely can.



Complete on two discs with an accompanying comprehensive manual, **Worldscape** challenges you to change the world.

*Your ultimate goal – world peace and harmony – perfection with **Worldscape***





ECLIPSE

Puts other Computer Games in the Shade

Available through all good dealers or purchase direct from **ECLIPSE**
£19.95 each inc VAT and p&p Order by Card or Cheque

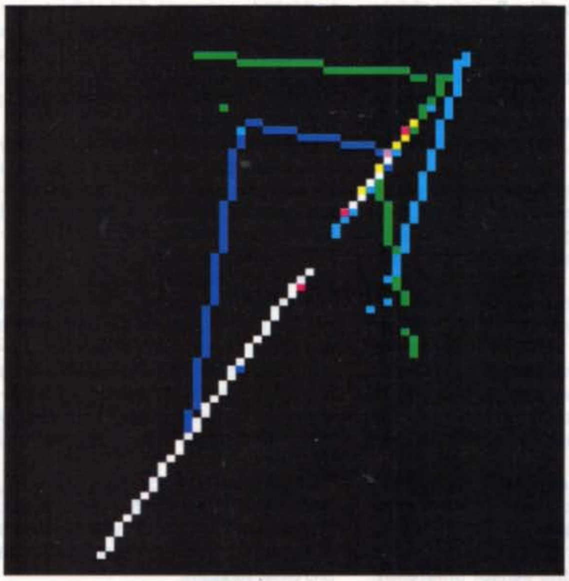
Burcott Manor Wells Somerset BA5 1NH
Tel: 0243 531194 Fax: 0243 531196

AMERICAN EXPRESS Cards Welcome
VISA
Access

THE
BEEB
BODY
BUILDING
COURSE

Kinky kinetics

Mike Cook invites you to exercise your artistic talents with his light organ

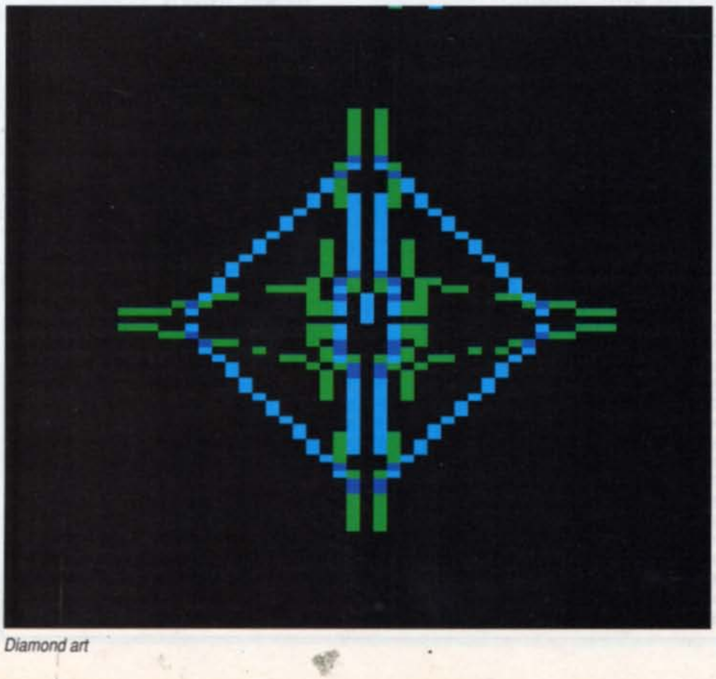

Line art

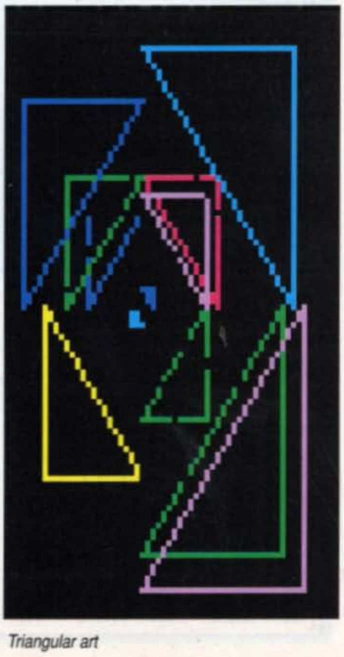
KINETIC art is making a comeback. Perhaps it's something to do with the nostalgia for the Sixties – even flared trousers are fashionable again. Well for those of you who missed it the first time round kinetic art, as the name implies, involves a work that is constantly changing, offering new and surprising forms for the viewer.

I recently saw a fine example of this in Bremen, Germany, by the river: Three huge, slowly revolving blades. However most kinetic art is passive, which means the viewer is accepting a pre-programed sequence of events. This sort of system is known as deterministic because all the possible patterns have been determined in advance when it was made.

What characterises the best of kinetic art is the ability of the viewer to take an active part in generating and guiding the presentation before him. However as most artists are not engineers this feedback tended to

➤


Diamond art


Triangular art

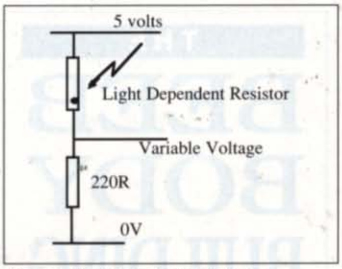


Figure I: The basic potential divider

➤

be rather crude. In the Sixties there was no easy access to computers, so most systems tended to be electro-mechanical affairs. So to end the year I have decided to investigate the capabilities of a simple but flexible computerised system.

What I needed was a low cost transducer which could respond to a person's presence. There are several possibilities, but I have decided to use four light-dependent resistors as they are cheap and easy to interface.

The cadmium sulphide light dependent resistor works like this: Particles of light (photons) hit the chemical and dislodge electrons from the atoms which allow them to take place in the conduction process.

The more light that falls on it the more electrons there are and the easier it is to conduct electricity. Hence more light equals lower resistance.

We can use this effect in a simple potential divider as shown in Figure I. We need four of these circuits connected to each channel of the analogue input port or joystick socket.

The full practical diagram is shown in Figure II. The numbers on the right hand side refer to the 15 way D-Type plug – if you look closely the numbers are printed on the back of the plug.

The electronic components are available as Body Build pack No.67 (see the order form).

Now how to arrange the photo cells? There are various options: One is to place them in a group in a box, then by waving your hands over the box you will affect each photoelectric sensor differently. Another idea is to place a photo cell at each corner of the monitor, then with a little backlighting a viewer in front of the screen will cause changes dependent upon his viewing position. You could arrange a box with light bulbs at one side and the cells on the other. The viewer then inserts his hands to manipulate the display.

However the hardware, as ever, is only part of the story. What brings it all to life is the software. This is where your imagination comes in, however to get you going I have come up with the program in Listing I.

This is split up into two parts, a test program and a sample art package. A procedure common to both is SAMP, defined at line 1140, which samples the light sensors and scales it to the range 0 to 39. The variable *SCALE%* controls the dynamic range and *OSET%* is used to remove any residual offset. You will probably have to play about with these variables to suit your local light levels.

The test portion, which starts at line 980, produces a line bar graph for each sensor. You can use this to adjust your light levels or to see the results of changing the size and offset variables.

Having set up the system, pressing any key takes you to the art part of the pro-

```
   10 MODE7
   20 PRINT"Beeb Bodybuilding Course"
   30 PRINT"Kinetic Art"
   40 PRINT"THE MICRO USER"
   50 PRINT"December 1990"
   60 PRINT"By Mike Cook"
   70 PRINT
   80 TLIM=3000
   90 TIME=0
  100 *FX16,4
  110 SCALE%=1024
  120 OSET%=16
  130 N%=8
  140 DIM X%(40),Y%(40),OX%(N%,4),OY%(N%
,4)
  150 DIM SX%(4),SY%(4)
  160 PROC_LOOKUP
  170 REPEAT:UNTIL TIME>200
  180 MODE 7
  190 PROCBAR
  200 REPEAT
  210 MODE 2
  220 VDU 29,640;512;
  230 PROC_POLYGON
  240 PROC_LINE
  250 PROC_TRI
  260 UNTIL FALSE
  270 END
  280 DEF PROC_LOOKUP
  290 FOR A=0 TO 40
  300 X%(A)=A*16
  310 Y%(A)=A*12.8
  320 NEXT
  330 FOR A=0 TO N%
  340 FOR B=1 TO 4
  350 OX%(A,B)=0
  360 OY%(A,B)=0
  370 SX%(B)=1:SY%(B)=1
  380 NEXT
  390 NEXT
  400 SX%(2)=-1:SX%(3)=-1
  410 SY%(3)=-1:SY%(4)=-1
  420 ENDPROC
  430 DEF PROC_LINE
  440 CLS
  450 VDU23,1,0;0;0;0;
  460 LOCAL A%,B%,C%,NP%
  470 NP%=1
  480 REPEAT
  490 GCOL3,RND(7)
  500 FOR A%=1 TO 4
  510 PROC_SAMP(A%)
  520 OX%(NP%,A%)=X%(V%)
  530 OY%(NP%,A%)=Y%(V%)
  540 NEXT
  550 FOR A%=1 TO 4
  560 FOR B%=1 TO 4
  570 FOR C%=1 TO 4
  580 MOVE SX%(C%)*OX%(NP%,B%),0
  590 DRAW 0,SY%(C%)*OY%(NP%,A%)
  600 NEXT:NEXT:NEXT
  610 NP%=NP% EOR 1
  620 FOR A%=1 TO 4
  630 FOR B%=1 TO 4
  640 FOR C%=1 TO 4
  650 MOVE SX%(C%)*OX%(NP%,B%),0
  660 PLOT 7,0,SY%(C%)*OY%(NP%,A%)
  670 NEXT:NEXT:NEXT
  680 UNTIL TIME>TLIM
  690 TIME=0
  700 ENDPROC
  710 DEF PROC_POLYGON
  720 CLS
  730 VDU23,1,0;0;0;0;
  740 LOCAL A%,NP%
```

Get it right ✓

```
  10 = 8AFC C
  20 = 17E7 E
  30 = 8125 7
  40 = D9FA 5
  50 = 635E 5
  60 = FC23 8
  70 = FF3E C
  80 = C91E 9
  90 = 173E 8
 100 = 7552 C
 110 = 8C54 7
 120 = C4EC 1
 130 = 6562 B
 140 = 6AF5 9
 150 = D366 6
 160 = 4BA6 1
 170 = DEF4 D
 180 = 1092 E
 190 = 45A2 A
 200 = BFBA 8
 210 = 4037 9
 220 = BF50 6
 230 = B5E6 A
 240 = FE07 C
 250 = E93E 6
 260 = 226C F
 270 = FD2E 4
 280 = 66D9 C
 290 = 917A A
 300 = 15A8 0
 310 = 8563 4
 320 = 2C83 4
 330 = 347C B
 340 = 7BE5 E
 350 = BDE8 C
 360 = 56CB 2
 370 = EC50 E
 380 = 2C83 7
 390 = 2C83 4
 400 = E917 9
 410 = 97DD 6
 420 = ED0F E
 430 = F070 9
 440 = 7A16 8
 450 = 1E64 A
 460 = EFB3 0
 470 = 9376 5
 480 = BFBA 1
 490 = B716 9
 500 = C813 1
 510 = F2F9 D
 520 = 69E1 D
 530 = 3CA3 F
 540 = 2C83 2
 550 = C813 5
 560 =   66 A
 570 = 47B5 B
 580 = 522F 0
 590 = 672A 2
 600 = 7A89 9
 610 = C758 5
 620 = C813 0
 630 =   66 D
 640 = 47B5 A
 650 = 522F 3
 660 = A98C B
 670 = 7A89 8
 680 = C466 B
 690 = 173E E
 700 = ED0F C
 710 = 3F29 9
 720 = 7A16 8
 730 = 1E64 F
 740 = 8F48 E
 750 = 9376 A
 760 = BFBA 7
 770 = 3C56 0
 780 = C813 3
 790 = F2F9 5
 800 = 6DE7 B
 810 = 2890 4
 820 = 2C83 8
 830 = E07C 2
 840 = 26C1 6
 850 = 6C06 4
 860 = 2C83 C
 870 = 1FFB D
 880 = ABF7 F
 890 = C377 A
 900 = E07C 2
 910 = 26C1 F
 920 = 8C71 E
 930 = 2C83 7
 940 = D15D 5
 950 = C466 8
 960 = 173E B
 970 = ED0F B
 980 = A7E1 8
 990 = 1E64 A
1000 = 7A16 3
1010 = 6887 C
1020 = FF3E A
1030 = 60E0 7
1040 = AF12 5
1050 = BFBA 5
1060 = 20B6 D
1070 = 173E 7
1080 = A367 4
1090 = 3CF5 F
1100 = 4F0D 3
1110 = 2C83 8
1120 =  7E0 5
1130 = ED0F 1
1140 = 635B 2
1150 = 8E8A E
1160 = B990 6
1170 = B7E8 5
1180 = ED0F 9
1190 = 7752 8
1200 = 3638 D
1210 = 9376 8
1220 = 7A16 8
1230 = BFBA A
1240 = C813 A
1250 = 8E96 B
1260 = 9C5F 2
1270 = 65D6 E
1280 = 8C71 0
1290 = 79F6 5
1300 = F2F9 7
1310 = 2E4F F
1320 = 553A D
1330 = 8E96 2
1340 = A2C0 1
1350 = 5B49 A
1360 = 6C06 8
1370 = 2C83 C
1380 = ABF7 6
1390 = C377 D
1400 = C466 5
1410 = 173E 0
1420 = ED0F 2
```

gram. This is basically three different types of pattern you can alter with the light sensors, the length of time each one is shown is controlled by the variable in line 80, which is currently set for 30 seconds.

To speed up the pattern generation use is made of a lookup table *X%(n)* and *Y%(n)* to relate the sample value to the appropriate screen co-ordinates.

The procedure POLYGON uses the light sensors to control the position of each corner of a quadrilateral. This changes shape in sympathy with the light sensors. A record of each shape is stored in the arrays *OX%()* and *OY%*and when a certain number have been displayed the oldest one is removed.

The number of shapes on the screen at any one time is controlled by the variable *N%* set up in line 130. If you are running this on the faster Archimedes you might like to make this a large value. This pattern responds very quickly to light changes.

The next pattern, PROC_LINE, is more subtle. It is formed by a cross at the centre of the screen. Points along the arms of the cross are determined by the light sensors and then each point is connected to every other point. This has a four fold symmetry, the number of patterns on the screen for it being limited to two.

Finally PROC_TRI makes each corner of the screen respond to a different light sensor. A triangle is drawn with size and displacement from the centre controlled by the light sensor.

In all these displays I have chosen the colours at random, and there is nothing to stop you assigning this to one of the sensors. Archimedes owners will be able to experiment in the higher colour modes and achieve even better results. As usual I want the Body Build article to be a springboard for your own ideas.

I hope when you put on your one man (or woman) retrospective of kinetic art at the Tate you will invite me to the opening night. Have a very merry time this Christmas. See you next month.

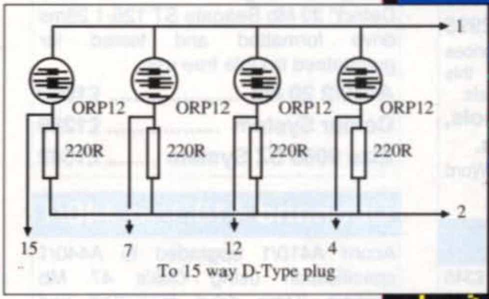
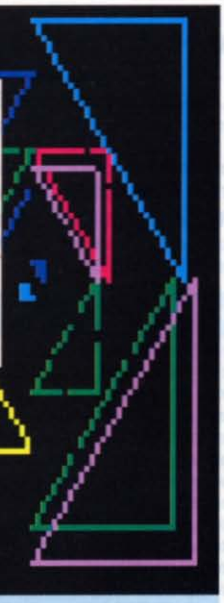


Figure II: Kinetic Art Machine



SUBSCRIBE NOW!
If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User.*

```
 750 NP%=1
 760 REPEAT
 770 GCOL1,RND(7)
 780 FOR A%=1 TO 4
 790 PROC_SAMP(A%)
 800 OX%(NP%,A%)=SX%(A%)*X%(V%)
 810 OY%(NP%,A%)=SY%(A%)*Y%(V%)
 820 NEXT
 830 MOVE OX%(NP%,1),OY%(NP%,1)
 840 FOR A%=2 TO 4
 850 DRAW OX%(NP%,A%),OY%(NP%,A%)
 860 NEXT
 870 DRAW OX%(NP%,1),OY%(NP%,1)
 880 NP%=NP%+1
 890 IF NP%>N% THEN NP%=1
 900 MOVE OX%(NP%,1),OY%(NP%,1)
 910 FOR A%=2 TO 4
 920 PLOT 7,OX%(NP%,A%),OY%(NP%,A%)
 930 NEXT
 940 PLOT 7,OX%(NP%,1),OY%(NP%,1)
 950 UNTIL TIME>TLIM
 960 TIME=0
 970 ENDPROC
 980 DEF PROCBAR
 990 VDU23,1,0;0;0;0;
1000 CLS
1010 PRINT"BAR GRAPH OF LIGHT SENSORS"
1020 PRINT
1030 PRINT"ADJUST THE LIGHT LEVELS"
1040 PRINT TAB(0,21)"Press a key for th
e art";
1050 REPEAT
1060 PRINT TAB(0,8)
1070 TIME=0
1080 FOR A=1 TO 4
1090 PROC_SAMP(A)
1100 PRINT STRING$(V%,"*");SPC(40-V%)
1110 NEXT
1120 UNTIL NOT(INKEY(0))
1130 ENDPROC
1140 DEF PROC_SAMP(C%)
1150 V%=ADVAL(C%) DIV SCALE% - OSET%
1160 IF V%<0 THEN V%=0
1170 IF V%>39 THEN V%=39
1180 ENDPROC
1190 DEF PROC_TRI
1200 LOCAL NP%
1210 NP%=1
1220 CLS
1230 REPEAT
1240 FOR A%=1 TO 4
1250 MOVE OX%(NP%,A%),OY%(NP%,A%)
1260 PLOT 7,0,OY%(NP%,A%)
1270 PLOT 7,OX%(NP%,A%),0
1280 PLOT 7,OX%(NP%,A%),OY%(NP%,A%)
1290 GCOL0,RND(7)
1300 PROC_SAMP(A%)
1310 OX%(NP%,A%)=X%(V%)*SX%(A%)
1320 OY%(NP%,A%)=Y%(V%)*SY%(A%)
1330 MOVE OX%(NP%,A%),OY%(NP%,A%)
1340 DRAW 0,OY%(NP%,A%)
1350 DRAW OX%(NP%,A%),0
1360 DRAW OX%(NP%,A%),OY%(NP%,A%)
1370 NEXT
1380 NP%=NP%+1
1390 IF NP%>N% THEN NP%=1
1400 UNTIL TIME>TLIM
1410 TIME=0
1420 ENDPROC
```

BEEB BODY BUILDING PACK ORDER FORM

Pack 67

4 Light dependent resistors 15 way D-Type plug
4 resistors and length of 6 core cable £8.00

Name ....

Address ....

....

....

Post code..

All prices include VAT and P&P

Educational establishment orders accepted.

Make cheques payable to Musbury Consultants and send to: 8 Fairhill, Helmshore, Rossendale, Lancs BB4 4JX.

Foreign orders add £3.00 if airmail delivery is required and also £3.00 if paying by Eurocheque (for bank clearing charges). Copies of previous articles are available – contact Musbury Consultants for details.

Dabhand Computing Ltd.

TERMS: UK residents add 15% VAT to all prices, except books. Delivery FREE on all postal items in the UK. Export, no VAT, carriage at cost. (quotations available). Europe maximum £2.50 software, £35 hardware. Access/Visa cards accepted by post/phone/in person. We are authorised Acorn dealers. Official orders accepted from public sector/education/PLCs, otherwise cash with order. Tender invitations welcome. Callers welcome. We are about 800 yds north of J17, M62. Fax: 061-766 8425. Price subject to change without notification. Goods offered subject to being unsold.

Dabhand Computing Ltd, 5 Victoria Lane, Whitefield, Manchester M25 6AL. This advert was produced using Impression from Computer Concepts.

Archimedes Computers

A 3000 2Mb Ram	**£599**
A 3000 LC 2Mb Ram *	**£699**
A 410/1	**£1099**
A 420/1 LC **	**£1299**
A 440/1	**£1699**
A 540	**£2995**

We can match or improve on prices advertised or quoted in or from this magazine please phone for the best deals.

We operate the Acorn Schools, University, teachers schemes.

* Pack includes PC Emulator, 1st Word Plus, Genesis. ** + Acorn DTP.

Oak SCSI Devices

20 Mb Internal Hard Disc	£345
45 Mb Internal Hard Disc	£449
80 Mb Internal Hard Disc	£592
100 Mb Internal Hard Disc	£783
200 Mb Internal Hard Disc	£1125
20 Mb External Hard Disc	£485
45 Mb External Hard Disc	£565
80 Mb External Hard Disc	£727
100 Mb External Hard Disc	£919
200 Mb External Hard Disc	£1235
300 Mb External Hard Disc	£2010
512 Mb External Hard Disc	£2535
560 Mb Magneto Optical Drive	£3220
42 Mb Ext. Removable Hard Disc	£999
60 Mb Tape Streamer	£860
Tape for above	£22
150 Mb Tape Streamer	£1249
Tape for above	£25
1 Gb Tape Drive	£2535
Tape for above	£30
for additional devices deduct	£100

Archimedes A400

5.25" Ext. floppy disc interface	£30
A 540 4Mb Ram Upgrade	£449
Additional 3.5" Floppy Disc	£119
ARM 3 Upgrade (30 MHZ)	£449
ARM 3 Upgrade (20 MHZ)	£349
ArVis S-VHS Video Cont. Board	£295
ArVis S-VHS Encoder Board	£145
ArVis Video Graphics Board	£877
Atomwide 8 Mb Memory Upgrade	£850
Chroma 345 Overlay Board	£389
Dongle Dangle (Impression/Oak)	£6
Econet Module	£46
Ethernet Expansion Card	£249
Floating Point Expansion Card	£449
Hawk V9 Video Digitiser	£339
I/O Expansion Card	£79
Keyboard Extender	£8
Midi Upgrade to I/O Exp. Card	£27
Midi Expansion Card	£65
Midi Upgrade Rom	£14
Rom Expansion Card (CC)	£45
Scanlight Junior Scanner A6 (CC)	£179
Scanlight Senior Scanner A4 (CC)	£389
Sheet Feeder for above A4 (CC)	£95
SCSI Expansion Card (Acorn)	£229
VIDC Enhancer	£29

Dabhand 400 Series Expansion Options

Dabhand 410/1 to 420/1

Acorn A410/1 upgraded to A420/1 specification using only the highest quality Samsung Ram and Oak's "Zero Defect" 20 Mb Seagate ST 125-1 28ms drive formatted and tested for guaranteed trouble free use.

A410/2 20 Mb	**£1099**
Colour System	**£1289**
Eizo 9060 SZ System	**£1542**

Dabhand 410/1 to 440/1

Acorn A410/1 upgraded to A440/1 specification using Oak's 47 Mb Rodime 24ms drive formatted and tested as above.

A440/1 specification	**£1349**
Colour System	**£1538**
Eizo 9060 SZ System	**£1792**

Oak 410/1 ST506 Hard Disc Drives

Archimedes A410 Internal Hard Disc Drives for use with 'on-board' ST506 winchester controller. Comes complete with mounting chassis, screws, connecting cables and easy to follow fitting instructions.

20 Mb 28ms	**£169**
40 Mb 28ms	**£285**
47 Mb 24ms	**£345**

A400 Series Ram Upgrades

Fast Samsung Ram complete with step by step fitting instructions.

1 Mb Ram	**£50**
2 Mb Ram	**£95**
3 Mb Ram	**£140**

A410/1 Series Ram and Oak Drive Upgrades

Up to 2 Mb Ram + 20 Mb	**£215**
Up to 2 Mb Ram + 40 Mb	**£330**
Up to 2 Mb Ram + 47 Mb	**£390**
Up to 4 Mb Ram + 20 Mb	**£305**
Up to 4 Mb Ram + 40 Mb	**£420**
Up to 4 Mb Ram + 47 Mb	**£480**

Dabhand Art/CDT Pack

Acorn A410/1 upgraded to A420/1 specification complete with:-

Pro Artisan
WorraCAD
RISC OS Extras & Utils Discs
Box of discs, printer cable and mouse mat

A410/2 Art/CDT Pack	**£1219**
Colour System	**£1408**
Eizo 9060 SZ System	**£1662**

Dabhand DTP Pack

Acorn A410/1 upgraded to A420/1 specification complete with:-

Impression & Scanlight Junior
Pro Artisan
RISC OS Extras & Utils Discs
Font FX, Box of discs, printer cable and mouse mat

A410/2 DTP Pack	**£1439**
Colour System	**£1628**
Eizo 9060 SZ System	**£1882**

Dabhand Business Pack

Acorn A410/1 upgraded to A420/1 specification complete with:-

Impression & Scanlight Junior
Pipedream
RISC OS Extras & Utils Discs
Font FX, Box of discs, printer cable and mouse mat

A410/2 DTP Pack	**£1469**
Colour System	**£1658**
Eizo 9060 SZ System	**£1928**

Additional upgrades for Dabhand Packs

Up to 4 Mb Ram	**£95**
Up to 40 Mb Hard Disc	**£116**
Up to 47 Mb Hard Disc	**£176**
Up to 4 Mb Ram + 40 Mb	**£236**
Up to 4 Mb Ram + 47 Mb	**£296**

Please add these prices to the base system prices quoted above.

Floppy Disc Drives

5.25" Single 40/80 no psu	£95
5.25" Single 40/80 with psu	£109
5.25" Dual 40/80 no psu	£185
5.25" Dual 40/80 with psu	£199
3.5" Single with psu	£85
3.5" + 5.25" 40/80 no psu	£185
3.5" + 5.25" 40/80 with psu	£209

Standard Monitors

Acorn Colour	**£199**
Philips CM8833	**£219**
Philips Mono (Green)	**£75**
Philips Mono (Amber)	**£79**

All monitors come with free lead. State type of computer when ordering.

Dabhand A3000 Series Expansion Options

A3000 Art/CDT Pack

Acorn A3000 upgraded to 2 Mb of memory complete with:-

Pro Artisan
WorraCAD
Oak monitor stand and expansion bridge
Acorn Colour Monitor
RISC OS Extras & Utils Discs
Box of discs, printer cable and mouse mat

A3000/2 Art/CDT Pack £999

A3000 DTP Pack

Acorn A3000 upgraded to 2 Mb of memory complete with:-

Pro Artisan
Impression & Scanlight Junior
Oak monitor stand and expansion bridge
Acorn Colour Monitor
RISC OS Extras & Utils Discs
Box of discs, printer cable,
Font FX and mouse mat

A3000/2 DTP Pack £1299

Oak A3000 Expansion System

Monitor Stand	£21
System Housing	£35
18 Watt PSU (Floppy Disc Drives)	£30
55 Watt PSU (Hard Disc Drive)	£79
90 Watt PSU (Hard Disc & Tape)	£89
Fan Kit	£15
3.5" Floppy Kit	£94
5.25" Floppy Kit	£84
20 Mb SCSI + Controller	£385
45 Mb SCSI + Controller	£505
80 Mb SCSI + Controller	£753
100 Mb SCSI + Controller	£944
200 Mb SCSI + Controller	£1260

A3000 SCSI Devices

Please refer to Oak External SCSI prices on opposite page as prices for A3000 external units are the same.

A3000 Upgrades

5.25" External floppy disc cable	£15
5.25" External floppy disc buffer (Pres)	£46
Dust cover (Keyboard + Monitor)	£12
Monitor Stand (Acorn)	£29
Monitor Stand (Pres)	£24
Mouse Extender (No more fiddling)	£8
Serial Upgrade	£19
Serial Link Kit (BBC-Arc)	£14
User & Midi Podule	£46
VIDC Enhancer	£29

A3000 Ram Upgrade

1 Mb Ram Upgrade £79

Master Series

Master 128	**£369**
Master Colour Monitor	£189
Eprom Cartridge	£10
Master Dust Covers	£6

Multiscan Monitors

EIZO 9060SZ Flexiscan	**£449**
EIZO 9070SZ Flexiscan ^	**£675**
Taxan 770+ LR Multivision	**£425**
Taxan 795 Multivision ^ **	**£495**
Taxan Viking II Mode 23	**£799**

^ comes with free VIDC enhancer.

** monitor has 0.26 dot pitch and Sony Trinitron tube.

Printers

Citizen 120D+ (Serial add £20)	£129
Citizen Swift 9	£195
Star LC10	£139
NEW - STAR LC200 COLOUR (9 pin)	£199
Canon Bubblejet BJ-130E	£499
Citizen Swift 24	£259
Colour Kit for above (also Swift 9)	£39
NEW - STAR LC24 - 200	£249
NEW - STAR LC24 - 200 COLOUR	£289
Integrex Colourjet 132	£519
HP Paintjet	£795
LASER DIRECT (Qume)	£899
LASER DIRECT (LPB4 Hi Res.)	£1249
LASER DIRECT (LPB8 Hi Res.)	£1299

Books (No Vat)

C: A Dabhand Guide	£14.95
Archimedes Assembly Language	£14.95
Archimedes Operating System	£14.95

The above books have accompanying discs add £5 for 5.25", £7 for 3.5"

Archimedes First Steps	£9.95
BASIC V: A Dabhand Guide	£9.95
RISCOS PRM's	£79.95
NEW Acorn DTP Advanced U.G.	£14.95
BBC Basic Guide (Acorn)	£19.95
Master 128 Ref. Man.Pts 1&2 .. (ea.)	£14.95
New Advanced User Guide	£19.95

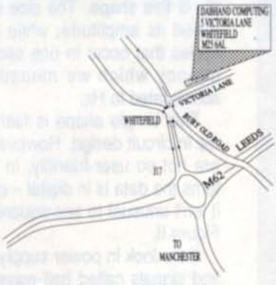
Additional Arc Software Manuals (Acornsoft)

First Word Plus, DTP, Assembler . (ea.)	£10
ANSI C Version 3	£19

Software

Acorn Desktop Publisher	£109.95
ANSI C V.3 Compiler + free C Guide	£139.95
Apocolypse (3D Space Game)	£24.95
Arc DFS (DFS Filing System)	£24.95
Arcade Soccer	£14.95
ArcComm (BBC Soft)	£24.95
ArcTerm 7 (Serial Port)	£59.00
Armadeus & Sampler Board (Sound Sampler)	£199.00
Artisan 2 (16 Colours)	£49.95
Atelier (Minerva 256 Colours)	£79.95
Clip Art for Draw/Impress. (Midnight Graphics)	£29.95
Colour Sprite Dumps - Star LC10, XB24, LC200 9/24, HP, Int. 132, Swift 9/24 (Midnight Graph.)	£26.04
Disc Tree 2 (Mitre Hard Disc Utility)	£39.95
DESKTOP OFFICE (Minerva Integrated Package)	£99.00
Euclid 2 (3D Drawing)	£57.95
E-Type (Driving Simulation) / Designer each	£14.95
Family Favorites (Minerva Compilation)	£14.95
First Word Plus V2 (Acorn)	£79.95
Fireball 2 (Superb breakout clone)	£19.95
FONT FX (Font Effects for Draw/Impression)	£8.65
Genesis (Hypermedia System)	£79.95
GRAPHBOX with Hotlink to PDream 3	£69.95
Holed Out (Golf Game)	£14.95
Holed Out Extra Courses, Designer each	£12.95
HOSTAGES (Superior)	£14.95
IMPRESSION 2 (Document Processor)	£149.00
IMPRESSION JUNIOR (Easy DTP)	£95.00
INERTIA (4th Dimension)	£14.95
INTERDICTOR 2 (Flight Simulator)	£27.95
Investigator 2 (The Best Disc Copier)	£24.95
Mini Hyperpacks (3 games per pack) No's 1 to 6	£19.95
Hyperpack (12 Games)	£79.95
Maddingly Hall! (Minerva Adv.)	£12.95
MAD PROFESSOR MARIARTY (Platform game)	£22.95
Magnetic Scrolls (Adventures)	£22.95
MANCHESTER UNITED	£22.95
MICROSTUDIO (Emr - Learn Music)	£79.00
MULTIFS (Arxe Systems - Atari, PC, DFS)	£27.95
Multistore Database (Minerva)	£199.00
NEVRYON (Unbelievable Graphics & Gameplay)	£14.95
PC Emulator + free PCE Sh/ware 1&2	£99.00
Pipedream 3 (WP)	£129.00
PIPE MANIA (Addiction beyond belief)	£17.35
POSTER (Superb effects)	£79.00
ProArtisan (256 Colours)	£79.95
REDSHIFT (Minerva scrolling arcade)	£14.95
Render Bender (Clares)	£59.95
Render Bender Demo Discs	£10.00
RHAPSODY (Clares Music package)	£34.95
Rotor (Arcade Strategy Game)	£19.95
SCHEMA (Multitasking Spread Sheet)	£99.00
Superior Golf	£14.95
STUDIO 24 PLUS (EMR New Risc Os Version)	£149.00
System Delta Plus (Minerva)	£69.00
Talisman (Minerva Graphical Adv.)	£12.95
TEMPEST (Clares DTP)	£99.00
Thundermonk (Arcade Adventure)	£14.95
TRACKER (Make Great Music)	£39.95
Worra Battle (Oak Tank Battle) FREE Headphones	£14.95
WorraCad (Oak 2D Draughting Package)	£75.00
Worra Plot (Draw/HPGL Plotter Driver)	£24.95

How to find us



Hours of Opening
Monday - Friday 9.00 a.m. - 5.00 p.m.
Saturday 10.00 a.m. - 5.00 p.m.

NO Carriage Charges in Mainland UK

Acorn Qualified Dealer
Educational Specialists

TEL: 061 766 8423

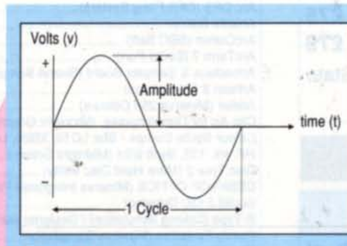


Figure Ia

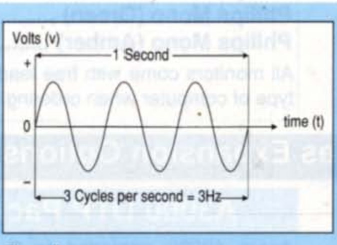


Figure Ib

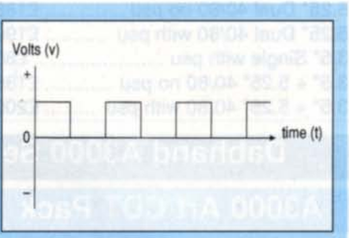


Figure II

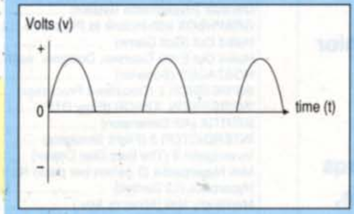


Figure IIIa

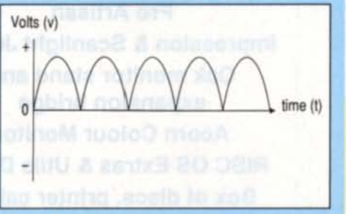


Figure IIIb

Paul Houghton makes waves

And Fourier

IN the world of electronics, it's very important to be able to understand the nature of the signals which travel around our circuits and systems. The interesting thing is that all waveforms can be built up from a basic wave shape, and you can do it yourself using your BBC Micro.

Many types of wave are simple shapes, such as the sinusoidal signal shown in Figures Ia and Ib.

The voltage of our mains electricity supply is this shape. The size of the signal is called its amplitude, while the number of cycles that occur in one second is the frequency which we measure in Hertz – abbreviated to Hz.

This simple shape is fairly easy to handle in circuit design. However, other signals are not so user-friendly. In computer systems the data is in digital – on-off form – so it isn't unusual to see square wave signals, Figure II.

If we look in power supply units, we may find signals called half-wave and full-wave rectifier waveforms (Figures IIIa and IIIb). And delving into other circuitry may reveal such shapes as the sawtooth and triangular signals shown in Figure IV.

The remarkable thing is that these more complex signals can be created by adding together a number of pure sinusoidal signals composed of a basic signal called the fundamental plus other smaller signals called harmonics which have frequencies which are simple multiples of the fundamental. This idea is shown in Figure V.

For example, the second harmonic is twice the frequency of the fundamental, the third harmonic three times the fundamental frequency and so on.

This idea was first shown by a French mathematician, Baron Jean Baptiste Joseph Fourier (1768-1830), who certainly wasn't to know just how useful his work would become in electronics and communication engineering. The signals are named the Fourier series in his honour.

Theoretically, an infinite number of harmonics are required to reproduce the complex signal exactly, but by just adding a few together we get a good approximation. Once we realise that complex signals are made up of a series of sinusoidal signals, we can predict the effects of circuits upon them.

Suppose that you are sending digital data down a pair of wires to a printer. The longer the length of wire used, the harder it is for high frequency signals to get through. Now remember that digital data consists of a whole range of sinusoidal signals at different frequencies.

If the higher frequencies can't get through then, at the receiving end, our on-off signal will be distorted because all its harmonics will no longer be present. In practice this limits the length of connection to your printer to just a few metres.

If we try to increase the rate at which we send data to the printer we have a signal whose harmonics are going to be higher still, and so even more prone to distortion. These facts limit both the rate at which data can be sent down a wire and the length of the wire.

To start with a complex signal and then work out the size and frequency of each of the sinusoidal signals in the series needs a great deal of mathemagics. It's much more fun, and just as instructive, to start with the individual sinusoidal signals and add them together to produce a resultant complex waveform.

The Basic program given here lets you do just that. So type it in, ensure you've made no typing errors using the checksums, save it then type RUN.

The program lets you to enter the size and frequency of each sinusoidal waveform and watch it being drawn. At any time you may instruct it to show you what happens if

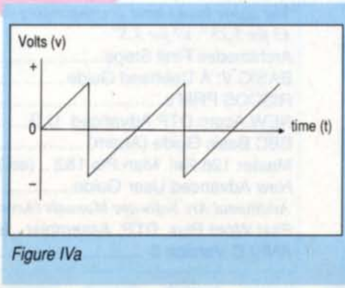


Figure IVa

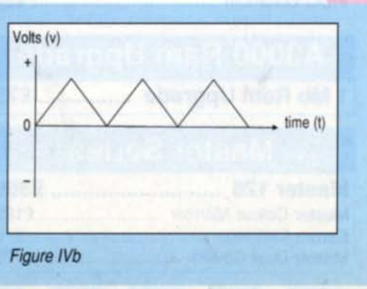
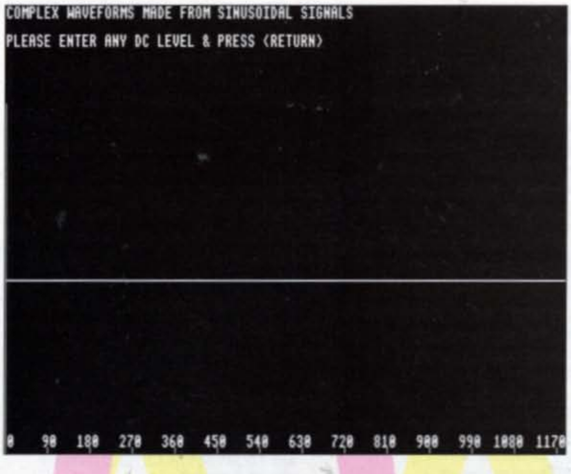


Figure IVb

my next trick...



```
COMPLEX WAVEFORMS MADE FROM SINUSOIDAL SIGNALS
PLEASE ENTER ANY DC LEVEL & PRESS <RETURN>
```

Figure VI

you add all the different waves together.

The results can be printed out using your own screen dump program – alter line 1090 to the command required by your screen dump program. If you aren't using a printer, delete line 1090.

In Table I you will find the values you need for the complex waveforms that have already been mentioned. For the more adventurous, the formulae for calculating more harmonics are provided – so get those calculators working.

To see how the program works, let's take the square wave as an example. When the program is run you will see the graph-type display shown in Figure VI.

The figures on the vertical axis represent the amplitude of each signal, while the horizontal figures determine how many cycles are plotted. One cycle of the fundamental frequency corresponds to 360 degrees marked on this axis.

You are asked if you want to enter a d.c.(direct current) component. This is a constant value sometimes needed to lift the resultant waveform. Its value for the square wave is given as 100.The difference result if we didn't include it is shown in Figures VIIa and VIIb.

You can see what I mean about the lifting effect. Type in 100 and press Return. If a waveform hasn't got a d.c. component, just hit Return. A straight line will be drawn across the screen with an amplitude of 100 (see Figure VIII). Now we start entering the ➤

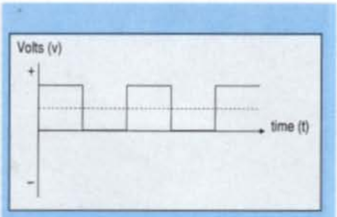


Figure VIIa

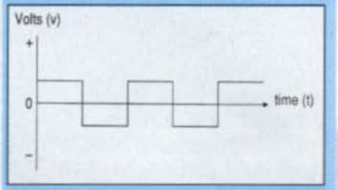


Figure VIIb

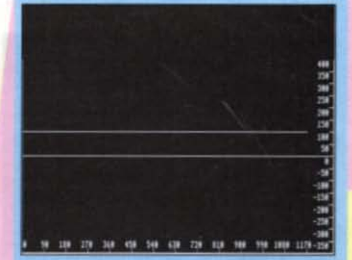


Figure VIII

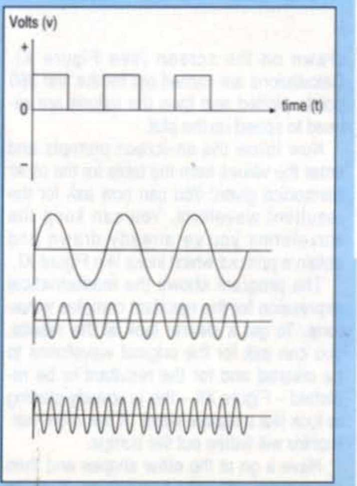
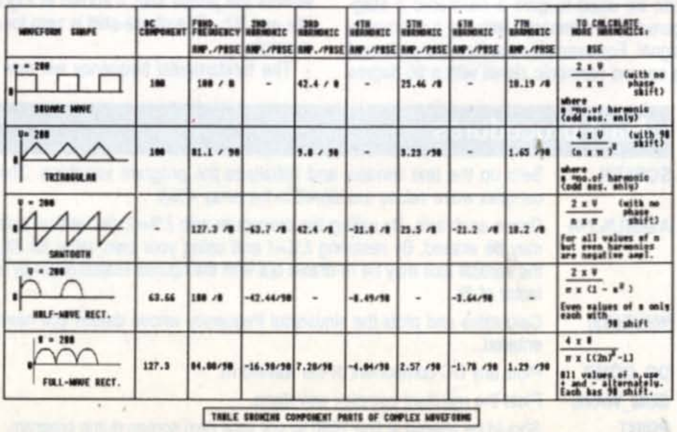


Figure V



WAVEFORM SHAPE	DC COMPONENT	FUND. FREQUENCY AMP./PHASE	2ND HARMONIC AMP./PHASE	3RD HARMONIC AMP./PHASE	4TH HARMONIC AMP./PHASE	5TH HARMONIC AMP./PHASE	6TH HARMONIC AMP./PHASE	7TH HARMONIC AMP./PHASE	TO CALCULATE MORE HARMONICS, USE
V = 200 0 SQUARE WAVE	100	100 / 0	-	42.4 / 0	-	25.46 /0	-	10.19 /0	$\frac{2 \times V}{n \times \pi}$ (with no phase shift) where n = no.of harmonic (odd nos. only)
V= 200 0 TRIANGULAR	100	81.1 / 90		9.0 / 90	-	3.23 /90	-	1.65 /90	$\frac{4 \times V}{(n \times \pi)^2}$ (with 90 shift) where n = no.of harmonic (odd nos. only)
V = 200 0 SAWTOOTH	-	127.3 /0	-63.7 /0	42.4 /0	-31.8 /0	25.5 /0	-21.2 /0	18.2 /0	$\frac{2 \times V}{n \times \pi}$ (with no phase shift) for all values of n but even harmonics are negative ampl.
V = 200 0 HALF-WAVE RECT.	63.66	100 /0	-42.44/90	-	-8.49/90	-	-3.64/90	-	$\frac{2 \times V}{\pi \times (1 - n^2)}$ Even values of n only each with 90 shift
V = 200 0 FULL-WAVE RECT.	127.3	84.88/90	-16.98/90	7.28/90	-4.04/90	2.57 /90	-1.78 /90	1.29 /90	$\frac{4 \times V}{\pi \times [(2n)^2 - 1]}$ All values of n, use + and - alternately. Each has 90 shift.

TABLE SHOWING COMPONENT PARTS OF COMPLEX WAVEFORMS

Table: Sample waveforms

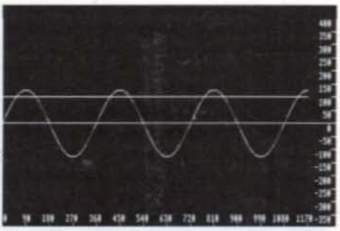


Figure X

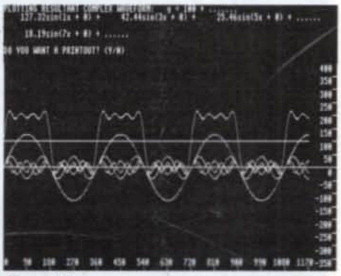


Figure XI

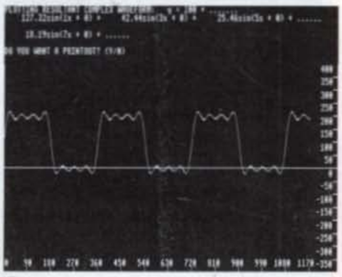
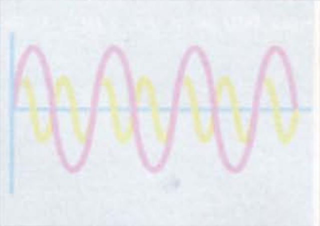


Figure XII

```
   10 REM MAKING WAVES
   20 REM by P.L.Houghton
   30 REM (c) The Micro User
   40 MODE135:IFHIMEM=&8000:M%=128:ELSEM
%=4
   50 MODEM%:PROCscreen
   60 VDU23;8202;0;0;0;30
   70 PRINT"Complex Waves from Sinusoida
l Signals":PRINT
   80 PROCaxis(1,1):PROCDC_COMP
   90 F%(J%)=FNval("Please enter the fre
quency as a multiple of the fundamental
(1 for fundamental, 2 for 2nd harmonic e
tc.) then press Return")
  100 V(J%)=FNval("Enter the peak value
of the waveform & press Return (a value
of 200 is suggested for the fundamental
then other harmonics may be easily scale
d)")
  110 P%(J%)=FNval("Enter any phase shif
t from fundamental (in degrees between 0
 and 359) and press Return")
  120 PROCwave("Now plotting y=")
  130 IFFNy("Draw another frequency")J%=
J%+1:V(J%+1)=-999:F%(J%+1)=-999:P%(J%+1)
=-999:GOTO90
  140 CLS:IFNOTFNy("View the resultant c
omplex wave") THEN 170
  150 CLS:IFFNy("Clear components first"
)CLG
  160 PROCSUM_WAVE
  170 IFFNy("Do you want a printout")PRO
Cprint
  180 CLS:PRINT
  190 IFFNy("Clear components & re-plot"
)CLG:GOTO160
  200 CLS:IFFNy("Run program again")RUN
  210 CLS:PRINT"BYE":PRINT:END
  220 DEF PROCscreen
  224 IFM%=4J%=39:ELSEJ%=79
  225 VDU28,0,6,J%,0,12
  230 DIM A%(1279),V(20),F%(20)
  240 DIM P%(20),G%(359)
  250 V(0)=100:V(1)=-999:F%(0)=1
  260 F%(1)=-999:P%(0)=0:P%(1)=-999
  270 J%=0:ENDPROC
  280 DEFPROCaxis(L%,I%)
  285 LOCAL@%,J%,K%,S%,T%
```



SUBSCRIBE NOW!
If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*.

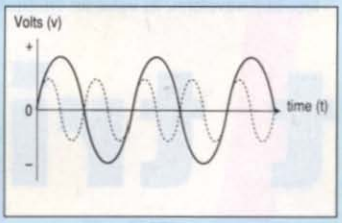


Figure IXa

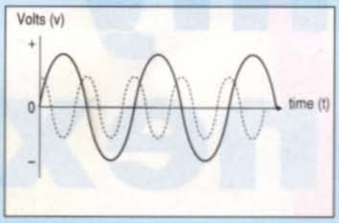


Figure IXb

details of each sinusoidal component – the frequency is simply entered as a number. The fundamental frequency is one, the second harmonic – being twice the frequency of the fundamental – is two and so on. Just follow the on-screen prompt.

In this instance we want the fundamental, so press the one. The waveform amplitude is entered next and it may be a positive or negative number. For our square wave the amplitude of the fundamental is 127.32.

Finally a phase shift is allowed for which can be used to give a harmonic a staggered start compared with the fundamental signal. For example, see how the picture of a second harmonic signal with a 90 degree phase shift differs from that of the harmonic without the phase shift – shown in Figures IXa and IXb . The phase-shift is zero for our example.

The fundamental frequency will now be drawn on the screen (see Figure X). Calculations are carried out for the first 360 points plotted and then the values are re-used to speed up the plot.

Now follow the on-screen prompts and enter the values from the table for the other harmonics given. You can now ask for the resultant waveform. You can keep the waveforms you've already drawn and obtain a printout which looks like Figure XI.

The program shows the mathematical expression for the resultant complex waveform. To get a clearer look at the results, you can ask for the original waveforms to be cleared and for the resultant to be re-plotted – Figure XII – this is already starting to look like a square wave. A few more harmonics will flatten out the bumps.

Have a go at the other shapes and then experiment with your own values. If you're interested in electronics, you should find it useful – if not, I hope you still find it fun.

Main procedures

SCREEN	Sets up the text window and initialises the program variables. The complex wave values are stored in the array *A%()*.
AXIS(L%,I%)	Draws each axis. By calling the procedure with *L%=0*, the vertical axis may be erased. By restoring *L%=1* and using your own value for *I%*, the vertical axis may be re-drawn but with the figures scaled down by a factor of *I%*.
WAVE(A$)	Calculates and plots the sinusoidal frequency whose details you have entered.
DC_COMP	Plots any DC component of the waveform.
SUM_WAVE	Plots the resultant complex waveform.
PRINT	Should be altered at line 1090 to suit your own screen dump program.

```
  290 GCOL0,1:MOVE0,0:DRAW0,800
  300 MOVE0,400:DRAW1279,400:MOVE0,0
  310 DRAW1279,0
  320 IFM%=4K%=120:J%=-48:ELSEK%=90:J%=0
  330 FORS%=0TO1170STEPK%:MOVES%,0
  340 DRAWS%,20:MOVES%+J%,50:VDU5
  350 PRINT;S%;:VDU4:NEXT
  360 GCOL0,L%:MOVE1279,0:DRAW 1279,800
  370 MOVE1260,0
  380 FOR T%=0 TO 800 STEP 50
  390 MOVE1260,T%:DRAW1279,T%
  395 IFM%=4J%=0:ELSEJ%=48
  400 MOVE1132+J%,T%+16:VDU5
  410 PRINT(T%-400)/I%:VDU4:NEXT:ENDPROC
  420 DEF PROCwave(A$):CLS
  430 PRINT"Calculating...please wait";
  440 FOR X%=0 TO 359
  450 H=(P%(J%)+(F%(J%)*X%))*1.7453E-2
  460 G%(X%)=V(J%)*SINH
  470 PLOT69,X%,G%(X%)+400
  480 A%(X%)=A%(X%)+G%(X%):NEXT:CLS
  490 PRINTA$FNW(J%)
  500 FOR C%=360 TO 1440 STEP 360
  510 FORX%=0+C%TO359+C%
  520 IFX%<1171A%(X%)=A%(X%)+G%(X%-C%):P
LOT69,X%,G%(X%-C%)+400:ELSEX%=1799:C%=14
40
  530 NEXT:NEXT:ENDPROC
  540 DEFFNW(J%)=FNs(V(J%))+"sin("+STR$F
%(J%)+"x+"+STR$P%(J%)+")"
  550 DEFFNs(V)LOCALL%,v$:v$=STR$INT(V*1
00):L%=LENv$:IFL%>2:=LEFT$(v$,L%-2)+"."+
RIGHT$(v$,2)ELSE="0."+RIGHT$("0"+v$,2)
  560 DEF PROCDC_COMP
  570 D=FNval("Please enter DC level & p
ress Return")
  580 IFD:Y%=INTD:FORX%=0TO1170:A%(X%)=A
%(X%)+Y%:PLOT 69,X%,Y%+400:NEXT
  590 ENDPROC
  600 DEF PROCSUM_WAVE:PROCaxis(1,1):CLS
  610 PROCout("Plotting resultant comple
x waveform:"):T$="y="+STR$D
  620 J%=0:REPEAT T$=T$+" + "+FNW(J%)
  630 J%=J%+1:UNTIL V(J%)=-999
  640 PRINT:PROCout(T$)
  650 MOVE0,400:GCOL0,1:FORX%=0TO1170
  660 DRAWX%,A%(X%)+400:NEXT:ENDPROC
  670 DEF PROCPRINT
  680 *GDUMP 0 1 1 1
  690 ENDPROC
  700 DEFFNy(T$)PROCout(T$+"? (y/n)")
  710 LOCALI%:REPEATI%=INSTR("YyNn",GET$
):UNTILI%:=I%<3
  720 DEFFNval(T$)LOCALV:CLS:PROCout(T$)
:INPUT'"?"V:=V
  730 DEFPROCout(T$)LOCALL%,W%
  740 IFM%=4:W%=40:ELSEW%=80
  750 REPEAT w$=FNw:L%=LENw$
  760 IFCOUNT+L%>=W%-1PRINTELSEIFCOUNT>0
PRINT" ";
  770 PRINTw$;:UNTILT$="":ENDPROC
  780 DEFFNw:LOCALL%
  790 L%=INSTR(T$+" "," ")
  800 w$=MID$(T$,1,L%-1)
  810 T$=MID$(T$,L%+1):=w$
```

```
 10 =    0 0    180 = 8005 3    320 = 692F 3    480 = B78C 8    650 = 9B53 5
 20 =    0 0    190 = 4BD1 1    330 = 5E3B 6    490 = 50AF B    660 = 9307 9
 30 =    0 0    200 = 3B0B 8    340 = 108A 7    500 =  9AC 9    670 = 2E64 7
 40 = 20AD D    210 = CCCC B    350 = 99DB 0    510 = 712E 7    680 = FAD7 E
 50 = D5F8 0    220 =  3F6 5    360 = 9F30 E    520 = 1521 A    690 = ED0F D
 60 = 9E34 3    224 =  ED2 0    370 = D3C4 7    530 = BB05 D    700 = 10C6 C
 70 = A753 1    225 = 98D3 4    380 = 3461 F    540 = CBAB F    710 = D3ED 2
 80 = 5ADF 1    230 = CDF4 D    390 = CB44 2    550 =  E3B 9    720 = 1B23 F
 90 = 81F4 F    240 = C811 A    395 = 64BD C    560 = C2FC A    730 = FB04 8
100 = 9243 5    250 = 8F93 F    400 = 9482 B    570 =  E6F 0    740 = B5D7 D
110 =  DFC E    260 = 5F30 0    410 =  885 D    580 = F062 1    750 =  E1F C
120 = 3329 1    270 = 106A 8    420 = 92AF 6    590 = ED0F D    760 = C588 D
130 = AF99 5    280 = 7B54 0    430 = 2500 5    600 = A872 5    770 = B0D8 A
140 = 5A2E 7    285 = 241A 8    440 = 6CDC B    610 = 7886 5    780 = 296B C
150 = 22C5 E    290 = ED27 4    450 = D953 9    620 = 897C 7    790 = 68E7 7
160 = A444 2    300 = C632 E    460 = D756 1    630 = FFD4 9    800 = E2C9 0
170 = 10D9 2    310 = BAEE 7    470 = D76B 0    640 = 6945 0    810 = 77E4 A
```

Now you can own probably the toughest set of pens in the world – for much less than half price!

(Or buy two – and get them both for almost a quarter of the normal price)

The three pens that make up the Pentech 200 pen set can stand up to the roughest treatment you can inflict on them – and still give you best possible writing quality. The pens, made to the highest standards of workmanship, are not only robust but are of classic appearance suitable for all occassions from the home to the Board Room, from the school essay to the best selling novel

We have made a special purchase of a limited number of Pentech sets and can now offer you this unique, high-quality writing technology at a price never before possible.

The normal retail price is £37.85. But with this special offer you can buy one set for just £14.95. Buy a second to offer a colleague as a present and we'll send you the two sets for £20!

You can buy with confidence. Each set comes with a lifetime guarantee.

The three pull-top pens in their presentation case consist of

One cartridge pen

One ballpoint pen

One fine liner

Choose from smart matt black or satin chrome metal finish

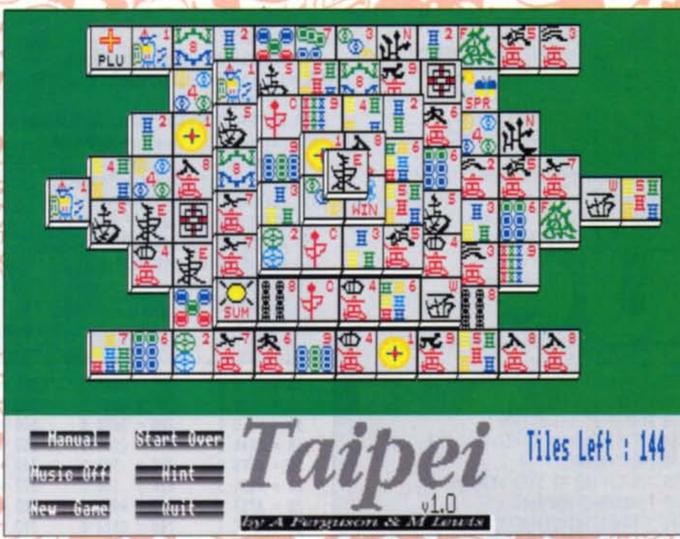
Cut-price

CHRISTMAS comes but once a year, and the usual cynical rejoinder is Thank goodness! As public domain software is not really seasonal, there is little in the way of festive offerings.

But do not despair, a couple of programs arrived to add the right atmosphere to the occasion: David Baker sent me a brilliant Snowman. Created using Render Bender the snowman melts as the sun comes out to be magically reborn as darkness returns.

Unfortunately, due to the size of the sprite files this demo will only work on a 2Mb machines which also meant that I couldn't fit in on the subscription disc this month. It will be on the January disc though.

On the BBC Micro PD front Rafael Jay has come up with some interesting versions of some popular carols: Good King Wencelas, While Shepherds, God Bless Ye Merry Gents, Deck the Halls and Once in Royal David's. Space permitting I'll squash this on to the BBC Micro subscription disc, although the 40 trackers may miss out on the complete selection – Happy Christmas.


Manual
Start Over
Music Off
Hint
New Game
Quit
Taipei
v1.0
by A Ferguson & M Lewis
Tiles Left : 144

Taipei – from the Orient

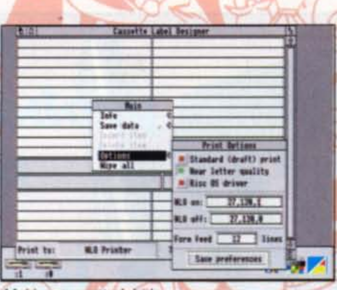
Around the yule log

To put you in the Christmas spirit there are a couple of games I'd like to bring to your attention – in particular one from Brothers in Arm called BIATetris. If you don't play any other, do try this one. Based on the Russian game which smashed its way into the hearts of computer users across the spectrum, it's simple, frustrating and excessively addictive. Offering excellent music, lovely graphics and the usual scrolling comments, it's brilliant.

The more classically inclined could always try Taipei. Known as Gun-Shy on the Apple Macintosh and as a variety of other names in its original board format, this is an ancient Japanese game of strategy.

My copy came courtesy of Norwich Computer Supplies. Though it does redraw the screen each time, it's easy to grasp even if you don't understand the Japanese ideograms. A hint option is available, but if you become well and truly stuck the sinister voice of Hal will tell you: "You can't do that".

On the same disc came a more usual text adventure. OK, so this doesn't use the Archimedes to its utmost, but you tell me how to use a ladder, anti-grav box and golden trident to collect an elusive crystal apple?


Cassette Label Designer
Main
Info
Save data
Options
Wipe all
Print Options
Standard (draft) print
Near letter quality
Risc OS driver
NLQ on:
NLQ off:
Form feed
12
lines
Save preferences
Print to:
NLQ Printer
:1
:0

Making cassette labels

It'll come in useful

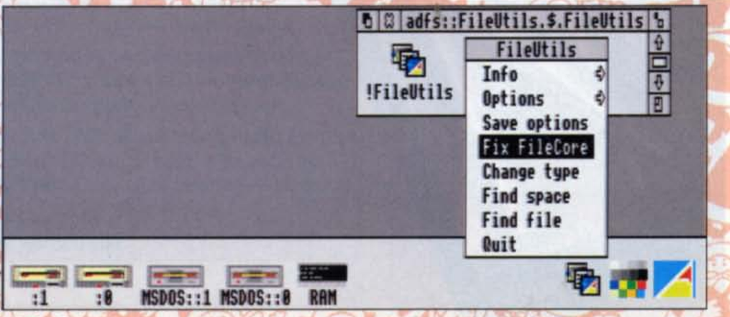
This is usually the phrase accompanying talc, socks or handkerchiefs. Well these PD offerings could save you from both irritation and headaches.

Two utilities will help more serious readers, Squeeze compresses absolute code while MakeApp converts Basic to absolute. Tom Lakofskis offers HotKey Basic which allows you to enter Basic without any fuss when you hold down Shift+Alt+B.

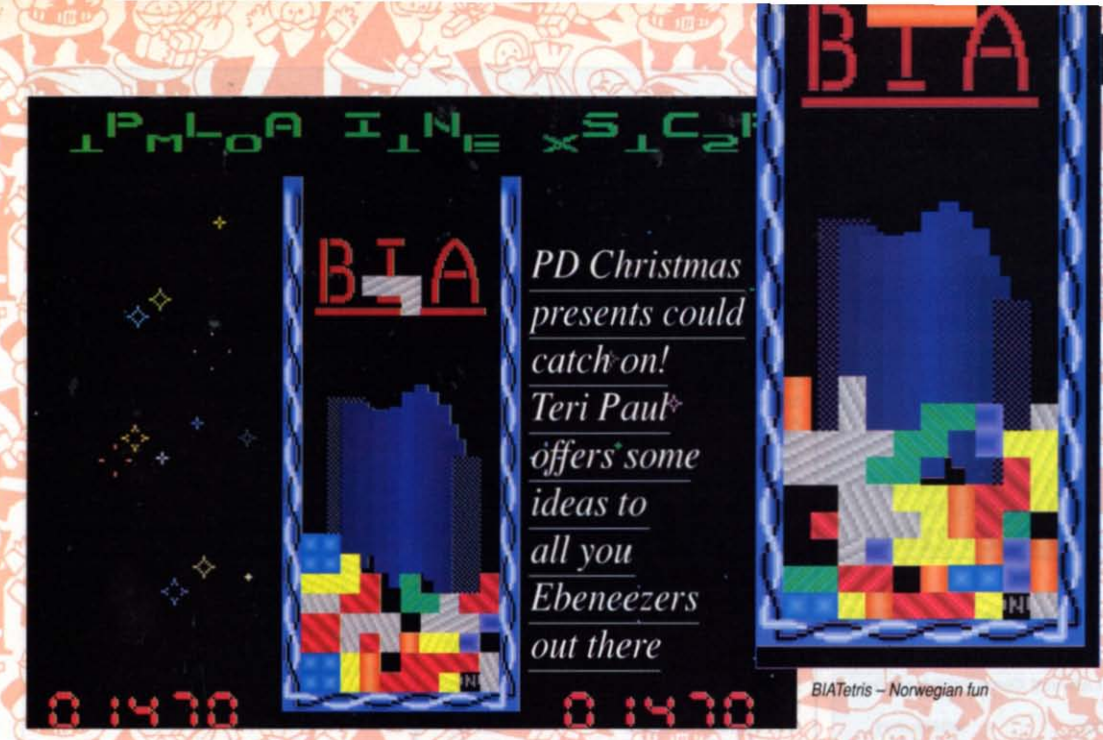
Ben Summers has supplied a very nice set of applications called FileUtils. There's a *command menu for files – you just drag a file to the icon and a menu appears. Then the Fix Filecore utility is especially useful: If, like me, you have been sent to screaming pitch with the *Filecore in use* error when you are in the middle of something, this is a crucial program to have.

What it does is extract the Filecore module from rom and actually fixes it. Do use this at the beginning of a session or you may still lose data. The ChangeType, FindSpace and FindFile programs are all also definitely worth having.

Ben also supplied a couple of hard disc utilities, !Boot and !BootCtrl. You can now set up your system to load whatever you


adfs::FileUtils.$.FileUtils
!FileUtils
FileUtils
Info
Options
Save options
Fix FileCore
Change type
Find space
Find file
Quit
:1
:0
MSDOS::1
MSDOS::0
RAM

Useful file functions



BIATetris – Norwegian fun

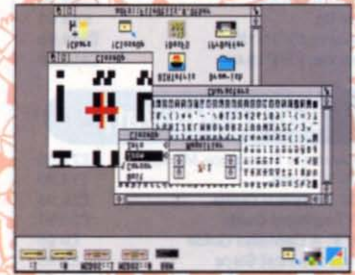
Crimbals!

PD Christmas presents could catch on! Teri Paul offers some ideas to all you Ebeneezers out there

want automatically: Deskduck, !Draw, !Edit and so on.

To round off with some more general useful bits, there's !Chars. If you have ever played about with DTP and fonts you may well have come across such fonts as Selwyn and Dingbats. Each key on your keyboard representing a symbol or piece of artwork.

It's not easy to remember which key is what, but with !Chars the character set is in front of you while you are using your word processor. You can choose which character you want using the mouse and this will then appear in the same way as if you used the keyboard.



This way up!

Finally, !Shutdown is a utility Mac owners will recognise. All DeskTop tasks are killed, open files are closed and heads are parked. A restart button will then allow you to start again without switching off the machine. You can add this to your utilities directory or use it as a *command.

Easy disassembly

Stocking fillers

Some fun bits you might want to try on your friends are Whoops and !WrongWay. The first will confuse your mouse pointer and the second will encourage you to go to Australia.

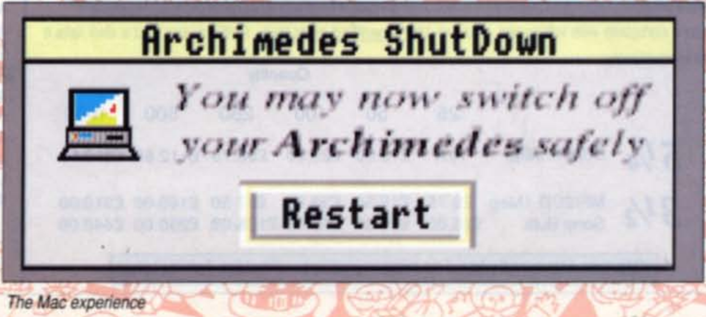
BBC PD

I promised you a look at the BBC programs this month, but I've had so many that I'm still working my way through them. The January column, therefore, will be dedicated to the BBC Micro.

The monthly disc

You can acquire the Archimedes programs mentioned this month – plus others – on the December subscription disc. To get as much as possible on the disc we have archived the programs, cramming 1.6Mb into 800k.

If you are unsure about de-archiving and creating ram discs, read the relevant !Help/Double Click Me file on the subscription disc before doing anything else.



Archimedes ShutDown

You may now switch off your Archimedes safely

The Mac experience

ORION
COMPUTERS
LIMITED

Tel: (0772) 421984
Fax: (0772) 622917

Access

VISA

Acorn Computers

New Launch
Archimedes 540

Features
13.5 MIPS
100Mb SCSI Drive as standard
4Mb of RAM (upto 16Mb)

Launch Price £2995

BBC Master 128K	£399.00
BBC A3000	£599.00
BBC A3000 Learning Curve	£699.00
Archimedes 410/1	£1099.00
Archimedes 420/1 Learning Curve	£1299.00

A420/1 Learning Curve Pack Includes

Acorn DTP
1st Word Plus + Introductory Video
Genesis
PC Emulator + DR Dos

A440/1 (47 Mb HD, 4Mb Ram)	£1699.00
A540 (100Mb HD, 4Mb Ram)	£2995.00

Free Offer!!

A3000 - Upgraded to 2Mb
A410/1 - 20Mb HD + Upgraded to 2Mb
A420/1 - 47Mb HD + Upgraded to 4Mb
A440/1 - Acorn Colour Monitor
A540 - Swift 24 + Colour Kit + Stand or Multisync Monitor

We will match or beat any price advertised in this magazine, please phone for best prices.

We operate the Acorn Education and New Teachers purchase schemes.

Monitors

Acorn Colour Monitor (AKF12)	£200.00
(If bought with Acorn Computer)	£191.00
Philips CM8833 II Colour Monitor	£209.00
Microvitec CUB 3000	£199.00
Taxan MultiVison 775 (0.28 d.p.)	£425.00
Taxan Multivision 795 (0.26 d.p.)	£469.00
(FST Black Trinitron Anti Glare Tube)	
Taxan Viking II (19" Mono, MS)	£749.00
EIZO 9060SZ Multisync	£465.00
EIZO 9070SZ Multisync	£649.00
Oak 20" Col. Multi-Sync (0.31d.p.)	£1299.00
12" Hi-Res. Green Screen	£85.00

A400/1 Accessories

Items marked with an * can also be used on A300

1Mb Ram Upgrade	£50.00
2Mb Ram Upgrade	£95.00
3Mb Ram Upgrade	£140.00
Acorn SCSI Card	£239.00
Floating Point Rom (AKA20)	£469.00
Arm 3 Upgrade (30 MHz)	£439.00
Com. Con. Scan-Light Mk II A4	£399.00*

Aleph One - Arm 3 Upgrade

30 Mhz Clock Speed
Speed increase of 4-5 times
Smooth window movement even in Mode 21
Only £439.00

Com. Con. Sheet Feeder for above	£100.00*
Com. Con. Scan-Light Junior	£185.00*
Acorn Midi Expansion card	£65.00*
I/O Expansion Card	£79.00*
Midi Upgrade for above	£27.00*
Acorn Midi Expansion Card	£65.00*
VIDC Enhancer	£26.00

Orion Hard Drives

Orion SCSI drives come complete with interface and are high speed, typically 750K per second, they are extremely quiet, and the external drives come in a small case unlike some of our competors.

ST506 Internal (A410)

20Mb Drive	£179.00
47Mb Rodime Drive	£279.00

SCSI Internal (Suitable for A300 & A400)

40/45 Mb Drive	£449.00
75/80 Mb Drive	£649.00
105 Mb Drive	£899.00
210 Mb Drive	£1099.00

SCSI External (Specify A3000 or A400)

40/45 Mb Drive	£549.00
75/80 Mb Drive	£749.00
105 Mb Drive	£999.00
210 Mb Drive	£1199.00
345 Mb Drive	£1999.00
SyQuest 42Mb Removable Drive	£1049.00

Cables

Arc to Monitor + Audio 2m	£8.65
Arc Parallel Printer Cable 1.8m	£5.25
Arc Parallel Printer Cable 3m	£10.40
Arc to BBC Serial Cable 2m	£6.95
Arc Keyboard Extension 2m	£7.75
Arc Mouse Extension 2m	£7.75

A3000 Accessories

Orion 1 Mb Ram Upgrade	£75.00
(Expandable to 4Mb using only 8 chips)	
Orion 3 Mb Ram Upgrade	£239.00
Upgrade from 2Mb to 4Mb	£199.00
Acorn Monitor Stand	£27.00
Serial Upgrade	£18.00
User Port/Midi Upgrade	£46.00
Beebug Disc Buffer	£38.00
Beebug Disc Buffer + SCSI	£135.00
Beebug Disc Buffer SCSI Upgrade	£99.00
PRES Monitor Stand	£24.95
PRES System Housing	£69.50
PRES 3½" Drive	£75.00
PRES 5¼" Drive	£99.95
Morley Analogue/User Port	£68.00
HCCS Disc Drive Adapter	£14.95
Next Technology CD-Drive Pack	£899.00
RTFM Joystick	£34.95
Voltmace DeltaCat Joystick	£26.00

Printers

C.C. Laser Direct Qume	£889.00
C.C. 600 DPI Laser Direct	£1299.00
Star LC10	£134.00
Star LC 200 Colour	£199.00
Star LC24-200	£219.00
Star LC24-15	£339.00
Star FR10	£299.00
Star FR15	£399.00
Colour option for above two	£36.00
Star XB24-10	£395.00
Star XB24-15	£519.00
Colour option for above two	£36.00
Cannon Bubblejet BJ130e	£449.00
Citizen 120D+ (Parallel)	£115.00
Citizen 124D	£199.00
Citizen Swift 9	£189.00
Citizen Swift 24	£249.00
Colour Kit for above	£35.00
Citizen Swift 24x (132 Column)	£349.00
Auto Sheet Feeder for Swift 24	£85.00
Citizen Prodot 9	£299.00
Citizen Prodot 24	£399.00
Colour Kit	£44.00
Panasonic KX-P1124	£229.00
Panasonic KX-P1540	£419.00

Books (No Vat)

Programmers Reference Manuals	£77.00
BASIC V Guide	£18.95
A3000 Technical Guide	£28.95
A540 Technical Guide	£28.95
Basic V: A Dabhand Guide	£9.95
Archimedes First Steps	£9.95
Archimedes Assembly Language	£14.95
Archimedes Operating System	£14.95
C: A Dabhand Guide	£14.95

Extra Manuals

Acorn D.T.P.	£10.00
1st Word Plus Release 2	£10.00
ANSI C Release 3	£20.00
Logistix Part 1	£10.00
Logistix Part 2	£10.00
ISO Pascal	£8.00

Bulk Diskettes

All our Disks come complete with labels etc. and are 100% certified error free. In the event that a disk fails it will be replaced immediately.

		Quantity					
		25	50	100	250	500	1000
5¼	DS/DD 96tpi	N/A	£13.00	£25.00	£58.75	£112.50	£210.00
3½	MF/2DD 1Meg	£9.75	£19.50	£39.00	£87.50	£160.00	£310.00
	Sony Bulk	£15.00	£30.00	£55.00	£125.00	£230.00	£440.00

Discounts available for trade orders - Phone for prices

No Carriage Charges
(in mainland UK)

Opening Hours
Mon-Sat 9am - 5.30pm
Lunch 12pm - 1pm

Acorn

The choice of experience.

Authorised Dealer

Ribbons (Compatible)

(Ribbons supplied are compatible unless stated)

Amstrad DMP2000/3160	£2.55
Amstrad PCW8256 Fabric	£3.45
Amstrad PCW8256 Multistrike	£3.45
Amstrad DMP4000	£3.95
Amstrad LQ3500	£3.20
Amstrad LQ5000	£5.50
Brother M1009,M1109	£2.95
Brother M1509	£5.95
Brother M1724	£5.95
Brother HR10,15,20,25,35 Fabric	£3.25
Brother HR10,15,20,25,35 Multistrike	£4.65
Cannon PW1080A	£3.85
Citizen 120D	£3.05
Epson LX80,86	£2.25
Epson FX80,MX80,LX800,LX850	£2.95
Epson LQ500,LQ800,LQ850	£3.00
Epson MX100	£3.00
Epson LQ1000,LQ1050,FX1000	£3.50
Epson LQ2500,LQ2550	£3.55
Epson EX800	£4.45
Panasonic KXP1081,1090,1080	£3.65
Panasonic KXP1124	£3.55
Seikosha GP100	£3.20
Star LC10	£2.55
Star LC24/10	£3.95

Ribbons (Branded)

Amstrad PCW8256/8512/LQ3500	£5.50
Amstrad DMP2000/3160	£5.50
Amstrad DMP4000	£6.50
Cannon BJ130 Bubblejet	£10.00
Citizen 120D	£3.25
Citizen Prodot 9 Black Fabric	£4.75
Citizen Prodot 9 Colour	£16.00
Citizen Prodot 9x Black	£6.50
Citizen Prodot 9x Colour	£18.50
Citizen HQP45 Black	£9.25
Citizen Swift 24 Black	£3.95
Citizen Swift 24 Colour	£13.75
Epson LX80/86	£3.75
Epson FX80,MX80,LX800	£4.50
Epson LQ400,550 Fabric	£5.25
Epson MX100,FX1000,FX1050	£5.75
Epson EX800/1000 Black	£7.25
Panasonic KXP145	£7.50
Panasonic KXP140	£9.35
Panasonic KXP115	£7.50
Colourjet 132/Cannon PJ1080 Black	£8.60
Colourjet 132/Cannon PJ1080 Colour	£14.60
Star LC10	£3.80
Star LC10 4 Colour	£5.75
Star LC24/10	£4.75

Software

DTP

Impression II (CC)	£135.00
Impression Junior (CC)	£74.00
Tempest D.T.P. (Clares)	£99.00
Ovation D.T.P. (Beebug)	£99.00

Spreadsheets

Sigmasheet (Minerva)	£39.95
Schema (Clares)	£99.00

WordProcessors

1st Word Plus Rel 2 (Acorn)	£69.95
Eas!Word (Minerva)	£31.95
Protext 5.0 (Arnor)	£119.00

Integrated Packages

Pipedream 3 (Colton)	£119.00
Desk Top Office (Minerva)	£104.00

Databases

Datavision (Silicon Vision)	£127.45
System Delta + (Minerva)	£54.95
Flexifile (Minerva)	£119.00
Multistore (Minerva)	£199.00
Genesis (S. Solutions)	£84.95
Knowledge Organiser (Clares)	£42.00

Accounting Software

Financial Accountant (S. Vision)	£233.75
Home Accounts (Minerva)	£39.45
Office Tools (S. Vision)	£318.75
Shareholder (S. Vision)	£165.75
MicroTrader Accounts	£199.00
MicroTrader Stock Control	£75.00

Languages

ANSI C Release 3 (Acorn)	£125.00
ABC Basic Compiler (Dabs Press)	£79.95
Risc Basic Compiler (S. Vision)	£127.45
RiscForth (S. Vision)	£127.45

Music

Rhapsody (Clares)	£39.95
Armadeus (Clares)	£61.00

Education

Fun School 2 Under 6 (Database)	£15.75
Fun School 2 6-8 (Database)	£15.75
Fun School Over 8 (Database)	£15.75
Maths Pack (HS Software)	£15.75
Reading Pack (HS Software)	£15.75
Bumper Pack II (HS Software)	£11.95

Graphics Manipulation

Poster + Fonts (4Mation)	£79.00
Render Bender (Clares)	£58.00
Solids Render (S. Vision)	£127.45

CAD

ARC-PCB (S. Vision)	£165.75
PCB Professional (S. Vision)	£318.75
SolidCAD (S. Vision)	£127.45

Games

Apocalypse (4th Dim)	£21.95
Arcade Soccer (4th Dim)	£14.75
Battle Tank (Minerva)	£11.45
Break 147 (4th Dim)	£18.45
Brix (RTFM)	£14.75
Caverns (Minerva)	£13.45
C.I.S. Hyperpack	£74.95
C.I.S. Mini Packs (1 - 4)	£19.95
C.I.S. Minipack 5	£23.95
Chocks Away (4th Dim)	£18.45
Drop Ship (4th Dim)	£14.75
E - Type (4th Dim)	£14.75
E - Type 100 Miles (4th Dim)	£13.00
E - Type Designer (4th Dim)	£13.00
Fireball II (CIS)	£15.75
Guild of Thieves	£19.95
Holed Out (4th Dim)	£14.75
Holed Out Desinger (4th Dim)	£14.75
Holed Out Vol. 1 (4th Dim)	£13.00
Holed Out Vol. 2 (4th Dim)	£13.00
Hostages (Superior)	£14.75
Inertia (4th Dim)	£14.75
Interdictor 2 (Clares)	£26.00
Mad Professor Mariarti (Krisalis)	£14.75
Man at Arms (4th Dim)	£14.75
Manchester Utd (Krisalis)	£19.95
Microdrive 3D (CIS)	£15.75
Nevryon (4th Dim)	£14.75
Pipemania (Empire)	£16.45
PON (RTFM)	£14.75
Pysanki (4th Dim)	£14.75
The Real McCoy (4th Dim)	£21.95
Redshift (Minerva)	£13.95
Superior Golf (Superior)	£14.75
The Olympics (4th Dim)	£14.75
White Magic (4th Dim)	£14.75
White Magic II (4th Dim)	£14.75

Utilities

Arc DFS (Dabs Press)	£22.95
LC 10 Colour Printer Driver (Ace)	£13.00
HP Paintjet Printer Driver (Ace)	£13.00
CIS Utils Disk	£8.95

Graphics - Art

Artisan II (Clares)	£49.95
Pro Artisan (Clares)	£79.00
Atelier (Minerva)	£79.00

Graphics - Presentation

Gammaplot (Minerva)	£39.95
Presenter II (Lingenuity)	£46.95
Graphbox (Minerva)	£62.45

Misc

Learning Curve Pack (Limited Stock)	£149.00
PC-Emulator (Acorn)	£94.00

Instant Finance available up to £1000

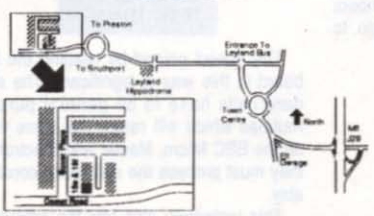
Puchases can be made at our premises and instant credit is available with Lombard Tricity Finance Ltd (Subject to Status). Finance is over 36 months on any purchase over £100 (APR 36.8%*).

10% Deposit is required.
Identification will be required, ie Driving Licence, Bank card or Credit Cards.

Written details are available upon request.

* Subject to change without notice

Where to find us!



All Prices Exclude VAT.
Please add VAT @ 15% to all prices

Dept. MU12, Units 18e &18f Boxer Place,
Moss Side Employment Centre, Leyland,
Preston, PR5 3QL.

Callers Welcome

We are situated 3 miles from M6 J28.
All offers subject to availability. Government & Educational Purchase Orders Welcome.

Next Day Delivery in UK - £5.50

Carriage on Export Orders charged at cost.

Minimum Order Value £10.00

All goods despatched within 24 hours, subject to stock levels.

Turbocharged

acorn electron

SCORE
0000
ENERGY
0250
LASER
0050
OXYGEN
0112
LEVEL 1

LAST month we looked at a technique of reducing the size of the screen on the Electron by blanking the colours during a delay provided by two different interrupts. This time we'll see how every ounce of processing power can be squeezed out of the machine by software alone.

Several techniques can give substantial increases in speed. The first thing to do is to disable the analogue to digital interface using a machine code osbyte with the accumulator set to 163, the *X* register set to 128 and the *Y* register set to one.

The equivalent FX call can be used from Basic, but this returns an error if the +1 interface is not attached. If the joystick is required only two of the four channels need to be disabled.

Another major speed increase can be obtained by disabling the keyboard interrupt, using an osbyte call with the accumulator set to &81.

The keyboard can still be scanned using the Inkey function with negative numbers as given in the User Guide. For example, to scan for the spacebar being pressed:

```
LDA #&81
LDY #&FF
LDX #(255-99)
JSR &FFF4
BCC space_not_pressed
\space pressed
```

However this takes time, so alternatively the keyboard can be scanned directly.

The keyboard on the Electron maps on to rom slot eight, so to read the data the Basic rom must be paged out and the keyboard paged in. This may be done by storing eight in register &FE05.

If the program is written entirely in machine code this only needs to be done once when the game is initially run as you won't be requiring Basic again.

The 14 address lines from the rom socket are attached to the keyboard columns. If a particular address line is low then one of the keys in that column is pressed. The row data from the keyboard is returned on the low order bytes of the data bus. For example, to find out if Space is being pressed:

SCORE
0012
ENERGY
0188
LASER
0044
OXYGEN
0513
LOADING BAY (1)

```
LDA &BBFC
AND #8
BEQ space_not_pressed
\space key pressed
```

To find out if X is being pressed use:

```
LDA &B7FF
AND #8
BEQ X_not_pressed
\X key pressed
```

The speed gained by reading the keyboard in this way is significant. The standard calls have to be general purpose routines which will return the same value on the BBC Micro, Master and Electron, so they must process the data quite considerably.

This technique also has the advantage that it takes less memory than the standard keyscan routine and so can be substituted in to the Electron version of a program with the minimum amount of effort.

Getting radical

It is also possible to speed up the Electron in Modes 0, 1 and 2 by temporarily forcing the operating system into Mode 6. This is relatively easy to accomplish and involves storing &B0 into the mode select register at &FE07.

This register also controls the cassette port, sound generation, cassette motor and the caps lock light. However unless the program is loading from tape while attempting to change mode there is no problem.

The key factor here is that the change is temporary – we change screen mode only while the screen blanking is occuring, so the change is invisible to a games player.

This technique is often used in games for drawing in new screens and can easily be adapted for use in any program which requires a complex screen to be drawn in Mode 0, 1 or 2.

SCORE
0000
ENERGY
0250
LASER
0050
OXYGEN
0100
MOVE ##
LEVEL 1

The listing shows how the forced mode change can be combined with the Colour Chop to give an increase in speed while the bottom part of the screen is still visible.

The basic idea is to force the processor into Mode 6 while it is drawing the upper part of the screen at the same time as the colours are turned black.

When the palette is restored the screen is also returned to Mode 1.

The mode change also has the side effect of causing a hardware scroll which has to be compensated for by resetting the screen start address registers at &FE02 and &FE03.

Line 380 changes the screen start address

Tony Oakden concludes his series on how to coax the last bit of speed from an Electron

to compensate for the scroll forced by the mode change.

Line 410 checks that we're looking at the right interrupt and exits if we're not.

Line 430 blanks the palette.

Lines 530 to 560 restore Mode 1 and the palette.

Star Port

A similar technique to this is used in Star Port. The game uses the Vsync interrupt to change the colours to black and force Mode 6, but a different method was found to control the timing for the second colour and mode change.

The program was organised so that the sprite routine itself could be used as a timing loop. To do this certain compromises had to be made: There are always three sprites on the screen – though sometimes only one or two are visible – and they are all the same size – four bytes wide by 24 high.

The routine which draws the sprite is actually part of the interrupt routine – when the Vsync interrupt is detected the palette is blanked and Mode 6 is forced and the sprites are drawn.

Finally, Mode 1 and the palette are restored to normal. By doing this it is possible to get a 50 per cent increase in speed while blanking five lines of the top of the display. The three sprites never flicker because the colours are always blanked while being drawn.

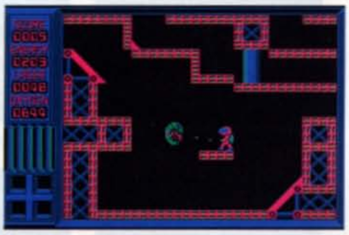
The main problem encountered with this arrangement was ensuring that the routine to draw the sprites always took the same time to execute.

The speed of certain machine code instructions vary depending on the location of the data which they are manipulating. For example the instruction:

```
LDA &3080,X
```

may take either four or five instruction cycles to execute depending on whether the addition of the X register to the address causes the resulting address to cross a page boundary. However, by using waiting loops to balance this it was possible to get the final colour change line steady to within two pixels.

● *Well, that's it. Speeding up the Electron with software is quite realistic, and it is possible to recover valuable memory from the screen without producing a messy hash of images. I hope you find it useful.*



The techniques described in these articles have been used by Tony Oakden in his new game Star-Port released by Superior Software on the Play It Again Sam 14 collection

```
   10 REM Speed up (part 2)
   20 REM by Tony Oakden
   30 REM (c) The Micro User
   40 PROCassemble
   50 A%=163:X%=128:Y%=1:CALL&FFF4
   60 MODE1
   70 CALLsetint
   80 TIME=0
   90 PROCtriangle
  100 PRINTTAB(7,20);"FAST MODE ";TIME/1
00;" SECS"
  110 STOP
  120 **
  130 DEF PROCtriangle
  140 GCOL 3,1
  150 FOR A=0 TO 1023 STEP 32
  160 MOVE 640-A,0
  170 MOVE 640+A,0
  180 PLOT 85,640,A
  190 NEXT
  200 ENDPROC
  210 *
  220 DEF PROCassemble
  230 FOR A=0 TO 2 STEP 2
  240 P%=&900
  250 [
  260 OPT A
  270 .setint
  280 SEI
  290 LDA&204:STAoldvector
  300 LDA&205:STAoldvector+1
  310 LDA#interrupt MOD 256:STA&204
  320 LDA#interrupt DIV 256:STA&205
  330 CLI
  340 RTS
  350 :
  360 .interrupt
  370 \ALTER SCREEN START ADDRESS REGIST
ERS TO COMPENSATE FOR SCROLL
  380 LDA#&0:STA&FE02:LDA#&22:STA&FE03
  390 \
  400 LDA&FC:PHA:TXA:PHA:TYA:PHA
  410 LDA&FE00:AND#4:BEQrtc
  420 \BLANK PALETTE
  430 LDA#&FF:STA&FE08:STA&FE09
  440 \FORCE MODE CHANGE
  450 LDA#&B0:STA&FE07:STA&282
  460 .exit
  470 PLA:TAY:PLA:TAX:PLA:STA&FC
  480 JMP(oldvector)
  490 :
  500 .rtc
  510 LDA&FE00:AND#8:BEQexit
  520 \FORCE MODE CHANGE TO MODE1
  530 LDA#&88:STA&FE07:STA&282
  540 \RESET PALETTE
  550 LDA#&34:STA&FE08
  560 LDA#&35:STA&FE09
  570 JMPexit
  580 .oldvector:EQUW0
  590 ]
  600 NEXT
  610 ENDPROC
```

Get it right ✓

```
 10 =    0 0 | 140 = 38CB 3 | 270 = 76C1 F | 400 = D8B9 D |
 20 =    0 0 | 150 = D8ED B | 280 = 2C4A B | 410 = 4145 3 |
 30 =    0 0 | 160 =  509 F | 290 = AD8B 7 | 420 =    0 3 |
 40 = 126A A | 170 = 2290 B | 300 = 1F8B 1 | 430 = 93A9 9 |
 50 = A7A7 F | 180 = 2336 A | 310 = 6AB3 9 | 440 =    0 9 | 530 = 9250 6
 60 = EA3A 0 | 190 = 2C83 2 | 320 = F054 6 | 450 = CE8D 6 | 540 =    0 6
 70 = CAF4 D | 200 = ED0F 6 | 330 = D5B1 2 | 460 = DC83 0 | 550 = 2897 1
 80 = 173E E | 210 = 8528 1 | 340 = 9843 3 | 470 = F4CE 1 | 560 = 57F3 B
 90 = BAAD D | 220 = 98A5 A | 350 = 9719 B | 480 = 3D0D 5 | 570 =  45C 7
100 = DCCF 0 | 230 = FCB5 9 | 360 = 83BD 4 | 490 = 9719 D | 580 = B40E 7
110 = 4E55 2 | 240 = C92F 1 | 370 =    0 4 | 500 = BB24 B | 590 = 8B58 5
120 = 6C05 D | 250 = EB9E 7 | 380 = A6D3 4 | 510 = 46C6 4 | 600 = 2C83 C
130 = 3062 4 | 260 = DDA7 B | 390 =    0 4 | 520 =    0 4 | 610 = ED0F 6
```

ARCHIMEDES
BBC MICRO
ELECTRON

THE 4TH

U.I.M.
ULTRA-INTELLIGENT-MACHINE

U.I.M.

U.I.M. is a massive 3D arcade adventure set in the future. 2½ years of dedicated design and programming have produced this massive game. The "greenhouse" gases melted the icecaps and all life now exists in the oceans. There are over 65000 underwater ports each with their own colonies.

You must travel the oceans, trading in commodities, shares and currency. There are over 250 missions to complete before you will find your goal - the U.I.M. - created to be almost a god! Your craft is a highly manoeuvrable (and expandable) futuristic submarine named Black Satyr.

On your travels you will encounter many submarine types. Many of the most advanced and aggressive submarines do not appear until you reach later networks of ports. In addition you will also meet the Replicants - man-made underwater machines which have gone "renegade" and are capable of reproduction.

As you progress it is therefore essential to avail yourself of the highly sophisticated range of combat and defensive equipment available. The quest for the U.I.M. will be long and involved, the dangers intense, but the reward priceless!

"Will I keep playing it the way I've played Elite for years? And the answer is YES. Graphics 10, Playability 10, Value for Money 10"____________***The Micro User, Nov' 89.***

U.I.M. is disc only and will run on BBC B or B+ with 16K of sideways RAM, BBC Master series and all Archimedes Computers.

BBC

ARCHIMEDES

ARCHIMEDES

ARCHIMEDES

E-type
00006
2:44

E-TYPE BBC & Electron Versions SOON!

E-TYPE

Take control of £70,000's worth of gleeming "E-Type" and head off for the drive of a lifetime. Hear the digitised roar of the 5.3 litre 12 cylinder engine as you tear along lanes, motorways and desert tracks at over 150 mph.

"E-Type" takes racing simulations into the world of 32 - bit RISC processing and gives you smoother, faster and more detailed graphics than you are even likely to see in the arcades.

E-TYPE

"On the Archimedes the illusion of speed is terrifyingly real and the way the landscape moves in three-dimensional perspective is a joy - a stunning experience"______***The Independent, Dec' 89***

"This is a superb game....the tracks are fantastic"______***The Times, Dec' 89***

"No race game, on any other machine, looks as good"______***The Times Educational Supplement, Dec' 89***

"For challenging races with a real sense of speed and fun, go for E-Type's ignition key"______***The Games Machine, Feb' 90***

"There's just one word to describe E-Type: FANTASTIC! Graphics 10, Value for Money 10"______***The Micro - User, Dec' 89***

"The graphics in E-Type are really superb. E-Type in my opinion is probably the best game yet for the Arc"... ***Risc User, Dec' 89***

E-TYPE DESIGNER & EXTRA 100 MILES

Design your own "E-Type" tracks with this highly advanced but simple to use designer. It is enormously flexible to produce an endless variety of tracks to challenge you and your friends.

"The perfect complement to E-Type"... ***The Games Machine, Feb'90***

There is also an extra tracks disc featuring extra sprites and 100 miles of cunningly designed roads.

Please note that you will need the original E-Type game to use either the Designer or the Extra Tracks discs.

ARCHIMEDES

ARCHIMEDES

ARCHIMEDES

ARCHIMEDES

White
LEPRECHAUN
WHITE
TIME: 0597
LE: 0001
TITAN
IN THE DE
(C) The 4t

WHITE MAGIC

White Magic is a unique arcade adventure in which you control 4 varied adventures:-

Kaldor the Leprechaun, Cheysul the Titan, Moriana The Warrior and Mandrake the Enchanter.

You can transform between all 4 characters at will and use their much needed special abilities.

It features 32 massive action-packed levels filled with aggressive guards and trolls, haunting ghosts and spectres, curious objects to find and use, and much more ......

White Magic is not a game for the faint-hearted; it is a fast-action game which requires fierce hand - to - hand combat and frantic weapon fire.

BBC

ARCHIMEDES

APOCALYPSE

Produced by Gordon Key, the author of Holed Out and E-Type, this incredible new game sets new standards of excellence in 3-dimensional solid graphics and digitised sound effects. Your overall task is to rescue a whole solar system from an evil dictatorship. Apocalypse is a feast for your eyes, ears and grey matter.

See your dealer or ring for your copy today

PRICES AND AVAILABILITY	ARCHIMEDES 31/2" DISC	BBC B/MASTER 51/4" DISC	BBC AND ELECTRON CASSETTE	MASTER COMPACT 31/2" DISC
Apocalypse	29.95	-	-	-
Nevryon	-	14.95	-	15.95
U.I.M.	29.95	19.95	-	21.95
The Olympics (6 Events)	19.95	-	-	-
E-Type	19.95	14.95*	9.95*	15.95*
E-Type Designer	16.95	-	-	-
E-Type Extra 100 Miles	16.95	-	-	-
White Magic	19.95	12.95	9.95	13.95
White Magic 2	19.95	12.95	9.95	13.95
Arcade Soccer	19.95	12.95	9.95	13.95
Holed Out	19.95	14.95	12.95	15.95
Holed Out Extra Courses 1	16.95	11.95	9.95	12.95
Holed Out Extra Courses 2	16.95	11.95	9.95	12.95
Holed Out Designer	19.95	-	-	-

* E-Type BBC & Electron versions due for release 7th May, 1990. All the above Archimedes games will work on the Archimedes A3000, 310 and 400 series

DIMENSION

ARCHIMEDES
BBC MICRO
ELECTRON

Magic
MAGIC
ENCHANTER
INNING...
Dimension

WHITE MAGIC 2

This includes 32 brand new and highly dangerous levels plus a complete level designer.

The level designer is a doddle to use and can be used to alter or design levels from scratch.

An extra invisible feature in White Magic 2 will really confuse our adventurers!

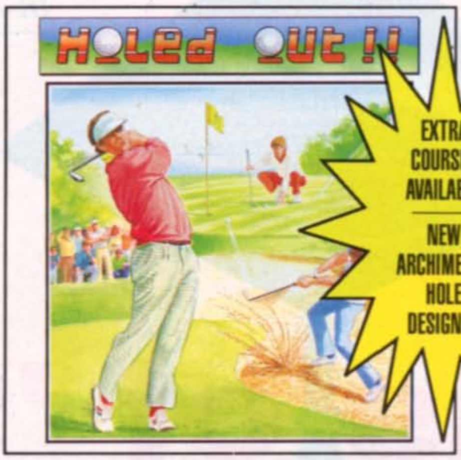
Reviews of White Magic

"The graphics are superb .... An absolute winner"
Electron User Golden Game August '89.

"Playability is good and I had to tear myself away in order to write this update review."
Archie review - The Micro User, October 1989.

ELECTRON

ARCHIMEDES



HOLED OUT

The most comprehensive, realistic and highly acclaimed golf simulation on the market today. This volume contains the original 2 contrasting 18 hole courses and comes complete with an easy to follow 16 page manual.

"I play golf and this game is the closest thing I've seen to the real game on a computer". *Archive, June 1989*
"I wouldn't have thought it possible to get a better simulation out of the beeb".
BBC Acorn User, June 1989

"The 3D perspective graphics are stunning"........... ***Electron User GOLDEN GAME June 1989***

"Holed Out is great .... The game plays very well and the graphics are superb"..............
Popular Computing Weekly. March 1989

"The Electron version is brilliant - it's almost the same as playing at Gleneagles. Unreservedly recommended"............. ***A & B Computing Game of the Month, June 1989***

HOLED OUT EXTRA COURSES

In response to your many requests we have now produced 2 volumes of extra courses. Each volume contains 2 superbly designed brand new courses. Each course has been meticulously created to test your golfing abilities to the limits. The holes are very varied and even Nick Faldo would need to use his skills to keep up his recent record.

ARCHIMEDES HOLE DESIGNER

Create your own golf courses with this easy - to - use yet highly sophisticated hole designer. Its flexibility allows you to define all aspects of the holes from their pars to the position and size of the lakes. It will keep you enthralled for years.

"The Holed Out Designer is very easy to use and it makes a perfect complement to the original game"........
The Micro - User, Jan' 90

BBC

ELECTRON

ARCHIMEDES

ARCHIMEDES

ARCADE SOCCER

ARCADE SOCCER

Arcade Soccer really is football action at its very best.

Using an overhead view to make game play as exciting as possible it features everything that you could want in a football game. Corners, sliding tackles, throw-ins, goal kicks, dribbling, shooting, passing and much more. But not only does Arcade Soccer give you Total Action it also puts you in Total Control.

Firstly you can play with either keyboard or joysticks, against the computer and/or with up to 23 friends. The options are almost limitless; you can choose the skill of the goalkeepers, the speed and length of the game, play "friendlies" or tournaments and even enter the most coveted of championships - the World Cup.

"The game is very playable and you do get a feeling of involvement as you knock the ball into the corner of the net straight past the diving goalie. It's definitely one to play again, and if you've enough friends it could make for a good day of enjoyment - and not a lot of games can do that. Value for money ... 10 out of 10"......
The Micro User, October "89.

"This game is excellent ... I'm not a real soccer buff, but I thoroughly enjoyed this desktop version. The micro-controlled players behave in an amazingly realistic manner. Playability 10." ... ***Archimedes review, The Micro user, Feb' 90***

ARCADE SOCCER!

ARCHIMEDES

BBC

ARCHIMEDES

ARCHIMEDES

HOW TO ORDER.... HOW TO ORDER.... HOW TO ORDER.... HOW TO ORDER....

DEALERS

Most of out games are available from most good dealers.

If they don't stock them, then please give them a copy of this advert and tell them that they can easily buy them directly from us.

SUPERFAST MAIL ORDER

LETTER

Simply send us a quick letter telling us the versions of the game(s) you require, your name and address, and payment via cheque, postal order or Access Card or Visa details.

TELEPHONE
(0742) 700661

TELEPHONE ORDERS WELCOME

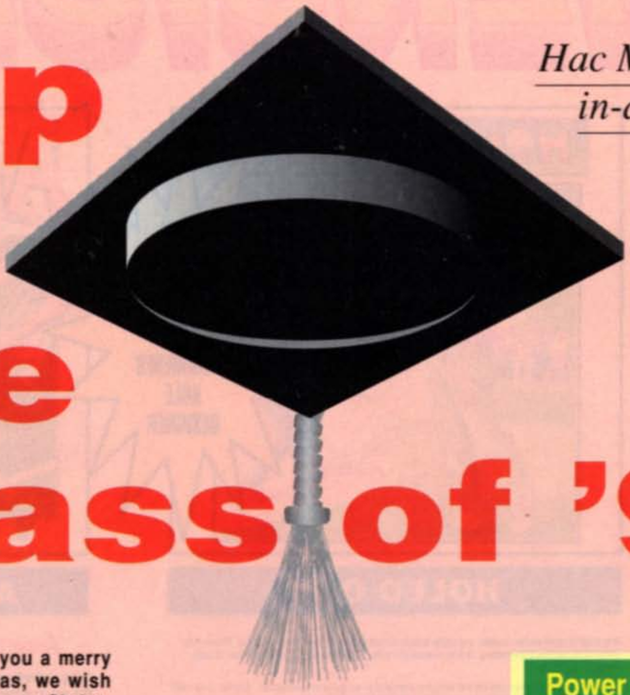
Access and Visa accepted, 24 Hour service, 7 Days a week.

*We pay the postage and packing. (UK only). Overseas add £2 per item.
*All orders are despatched by 1st Class Post on the SAME day we receive your order!

The Fourth Dimension, P.O. Box 4444, Sheffield, S3 8NN.

The Fourth Dimension

Top of the Class of '90



Hac Man takes an in-depth look at two arcade adventure classics

WE wish you a merry Christmas, we wish you a merry Christmas, we wish you a merry Christmas, and a Happy New Year. And no Christmas would be complete without an update to the Hac Man high-score table. Although the first edition was composed entirely from the high-scores of the authors of the featured games, I have long since thrown it open to all readers.

The only qualification for inclusion is that the score must be achieved without the use of pokes or cheat facilities. Of course, I cannot check on the validity of these scores, so I leave it up to individual consciences.

Most of these scores are quite incredible, all the more so for being genuine. However, three in particular really stands out for me: Gary Hunt's Thrust score, Perdita Patterson's more than five-fold improvement on her own high-score for Android Attack, and Corinne Berg's success with Tetris. This last one is particularly astounding because Corinne completed more than 900 lines in the course of this record-setting game.

She asks: "Can the score go to six figures?" Well, Corinne, Tetris stores its high-score table in memory using three bytes for each score, and each byte is used for two digits of the score. For example, a score of 98202 is stored in memory as 098202. I think this answers the question: Yes, Tetris can accept scores up to 999999. Keep going.

Incidentally, I have heard of higher scores than some of these, particularly a 30 million-plus Orlando totted up for Zalaga when it was first released way back in 1983. However, these are the highest scores that I have received. If you can do better, drop me a line.

The Hac-Man High-score Table

GAME	SCORE	PLAYER
Android Attack	2707680	Perdita Patterson
By Fair Means or Foul	758340	Kris McCann
Conqueror (Strategy game)	3621905	Jonathan Griffiths
Conqueror (Arcade game)	121333	Jonathan Griffiths
Crazee Rider	105390	Jason Stone
Crazy Painter	66540	Jason Stone
Frenzy	1327604	Jason Stone
Galaforce II	264100	Jason Stone
Hopper	37725	Jason Stone
Labyrinth	552790	Nick Glencross
Skirmish	153500	Chris Harrison
Snapper	100000	Jonathan Griffiths
Tetris	98202	Corinne Berg
Thrust	10080800	Gary Hunt
Yie-Ar Kung Fu	875700	Jason Stone
Zalaga	456090	Jason Stone

Power Pills

- ● High-score table
- ● Golden Figurine infinite energy and Master conversion
- ● Ravenskull Level Two Part Two

Going for the prize

As has often been said in this column, the arcade adventure is a very popular breed of game because it combines arcade action with adventure-style puzzles to bring out the best in a games player.

Although full-price offerings such as Exile and Citadel are possibly the best-known examples of the genre, arcade adventures more than hold their own at the budget end of the market.

One such offering is **The Golden Figurine** which was released by Atlantis Software a couple of years ago.

I recently received a letter from Oliver Robinson of Hemel Hempstead, Herts, who said that he could not get it to run on his Master 128, either with or without Acorn's Convert utility. The game loads from tape in 10 parts, but crashes as soon as the Figurine8 file has finished loading.

The reason for this is that Figurine8 loads into memory at page &A00 and overwrites what is called the extended vector table at the upper end of page &D00.

This table does not exist on an ordinary Model B but the Master needs it when call-

Castle assault

Let's press on with the solution to level two of **Ravenskull** which I started last month. We left our hero at the crossroads just north of the start position, having cleared all the treasure pieces from the south-west and south-east corners of the map. It is from this position that we continue our exploration of level two.

Unlike the south-west and south-east sections of this level, the north-west and north-east sections are quite independent of each other and in theory can be tackled in any order. Nevertheless, we will first attempt the north-east section.

Before we start, I should point out that the objects I described last month as boulders are in fact supposed to be wooden casks. So here we go, with casks and without boulders:

Proceed north from the crossroads, taking care with the room of spikes, and take the east fork at the T junction. At the end of this passage go north (ignoring the cask between the spikes – we'll come back to that later) and then go east until you reach a small crossroad.

On its right you can see two items of treasure, but it is imperative that you do not go right of this crossroad or a gate will close over the top of the nearer treasure piece, making it impossible to complete the level. Instead go north.

Take the treasure from either end of this passage. If you do not remove the treasure from the alcove at the eastern-most end of this passage you will not later be able to move the nearby cask which – at that time – will obstruct further progress.

Now retrace your steps to the above-mentioned crossroad and clear the treasure from the room to the south of the crossroad. Return to the crossroad and go west then south through the wide corridor to the right of the corridor through which you arrived at the crossroad.

As you make your way down this corridor you will see a scroll to the south and a fork to the west. Take the fork.

If you continue south you will cause two blocks to slam together behind you, trapping you with the scroll in a confined space with no means of escape. Instead, go west and skirt around the area of the scroll and remove the piece of treasure below the cask, together with the other two bits of treasure in the vicinity.

Retrace your steps to the point above the slamming blocks. This time go straight down and take the scroll. Use it immediately – it is another strength scroll – then discard it and leave the room by pushing the cask south.

Now go east avoiding the spikes and use the key that you found in the south-west corner to enter the room to the south of this passage.

Take the four treasure pieces, then discard the key and proceed north, picking up all the treasure as you go. Make sure that you pick up the two pieces from the right-hand side of the oft-mentioned crossroad without activating the slamming door, because you won't get another chance.

Make your way out of the north-eastern passage and leave this mid-eastern area by pushing the cask into the alcove.

Now proceed into the north-east corner of this level, carefully moving the casks to gain access to the treasure pieces and the second key. Now retrace your steps to the cask between the spikes mentioned in the first paragraph of the solution.

Move it out of the way to allow yourself access to a door. Open it with the key retrieved from the cask maze in the north-east section, then discard the key. Return to the T junction mentioned earlier.

As before, thanks to Alan Busvine of Brislington, near Bristol, and Bill Hensman of Keighley, Yorks, for all their hard work. Look out for the third and final part of the solution to level two in next month's column.

---

ing operating system routines – *FX calls and the like – from Basic.

This is normally not a problem on any machine, since most games are written entirely in machine code. However, the last file of The Golden Figurine code – Figurine9 – is a Basic program that manages the data loaded in the Figurine3 to Figurine8 files.

Accordingly, any OS calls made after this table has been overwritten will make the program crash. To circumvent this, I have written Listing I, which prevents the extended vector table from being overwritten, thereby allowing the game to run on the Master.

One fairly serious problem I encountered with The Golden Figurine was that although it claims Electron/BBC compatibility on the cover, the versions of the game on both sides of my cassette were identical – both apparently for the Electron. As many readers will know, the Electron is a much slower machine than the BBC.

Many modern games access the Electron's video hardware directly in order to speed things up as much as possible, and will not therefore run on the BBC Micro.

However, if a legally-written game is designed to run at a suitable speed on the Electron, it will run blindingly fast on the BBC Micro. This is what I found with Figurine.

To compensate for this lines 200 and 210 of the listing set up an artificial delay loop by causing the System 6522 VIA to generate interrupts much more often than it would normally do. Because all interrupts literally interrupt the 6502 CPU from its normal processing, this slows the whole system by keeping the 6502 busy.

The variables *hislow* and *loslow* allow the player to specify how much the system is slowed. The values I have set – zero for *loslow* and eight for *hislow* – give a playing speed with which I feel comfortable. If the game is too slow for you, increasing the value of *hislow* will increase the speed, and vice versa.

The variable *loslow* has 1/256th the effect of , and is really for fine tuning. I doubt that many readers will want to alter it. However, if for example, a value of eight is too slow and nine too fast, setting *hislow* to eight and *loslow* to 128 will give a result that is exactly half way between.

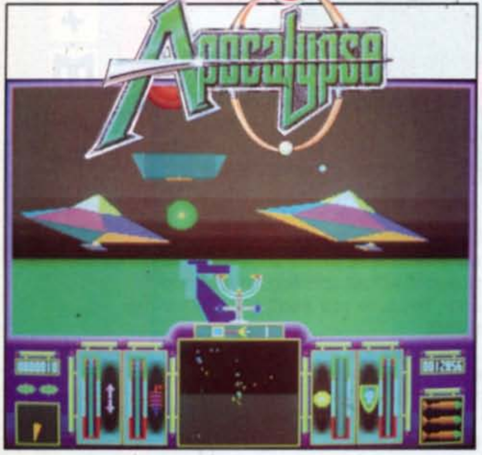
Incidentally, you will notice that the game slows considerably when you are pressing keys. This is because keyboard interrupts are being generated in addition to those produced by the 6522 – the poor 6502 doesn't really know what's hitting it!

Finally, line 170 provides an infinite energy facility. If you don't want it, delete this line before typing RUN.

```
10 REM Golden Figurine infinite energy
20 REM and Master conversion
30 REM by Hac-Man 1990
40 REM (C) The Micro User
50 REM
60 *FX 200,3
70 osbyte=&FFF4
80 loslow=0:REM low-byte of delay
loop (1-255)
90 hislow=8:REM high-byte of delay
 loop (1-255)
100
110 FOR I%=0 TO 2 STEP 2:P%=&120:[
OPT I%
120 LDA#0:STA&70:STA&72:TAY
130 LDA#&48:STA&71:LDA#&A:STA &73
140 LDX#3:.loop1 LDA(&70),Y:STA(&72),Y
150 DEY:BNEloop1:INC&71:INC&73:DEX
:BNEloop1
160 .loop2 LDA&4C00,Y:STA&E00,Y:DE
Y:BNEloop2
170 LDA#&60:STA&FCD:\infinite energy
180 LDA#&81:LDX#0:LDY#&FF:JSR osbyte
190 TXA:BPL return
200 SEI:LDA&FE4E:ORA#&F0:STA&FE4E
210 LDA#loslow:STA&FE44:LDA#hislow
:STA&FE45:CLI
220 .return RTS:]:NEXT
230 *KEY0 PAGE=&2800|MLOAD"FIGURIN
E2"|MEND|MOLD|M160|M170|M180|M200|
M430*LO."FIGURINE8"4800|M435CALL&1
20|MRUN|M
240 *FX138,0,128
```

A3000
ARCHIMEDES
BBC B/MASTER
ELECTRON

THE 4TH



APOCALYPSE

Apocalypse is designed purely for the Arc. The author, Gordon Key, has created a masterpiece which could not have been produced on any other computer.

The game places you on the surfaces of varied futuristic hostile planets colonised by ruthless enemies. In your highly advanced and extremely fast craft you must find your way around the planets and systematically annihilate the enemy.

The graphics are truly unbelievable. They are animated at revolutionary speed and explode into a terrifyingly real ball of flames when you shoot them accompanied by devastating sound effects.

Apocalypse is easy enough for a beginner to enjoy yet develops into a much deeper game with increasingly hostile foes. It will be up to you to discover how to destroy them.

The Royal Guild of Spacing will monitor your progress as you play. Your performance will be assessed at appropriate times and you will need to impress them if you are to continue your adventure. Apocalypse is an amazing game. There's only one way to describe it .... ***RAW EXCITEMENT.***

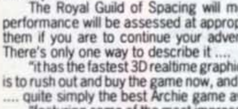
"it has the fastest 3D realtime graphics I've yet seen on the Archie .... My advice is to rush out and buy the game now, and be the envy of your Amiga owning friends .... quite simply the best Archie game available." .... ***Micronet May '90***

"featuring some of the most impressive graphics yet seen on the Archimedes .... Colourful, fast action along with ease of play and addictiveness ensure that this will be an all-time classic for the Archimedes." .... ***ACE '90***

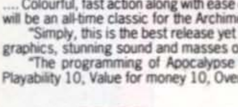
"Simply, this is the best release yet for the Arc by absolutely miles. Stunning graphics, stunning sound and masses of action. Brilliant." .... ***Risc User Sept '90***

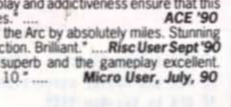
"The programming of Apocalypse is superb and the gameplay excellent. Playability 10, Value for money 10, Overall 10." .... ***Micro User, July, 90***

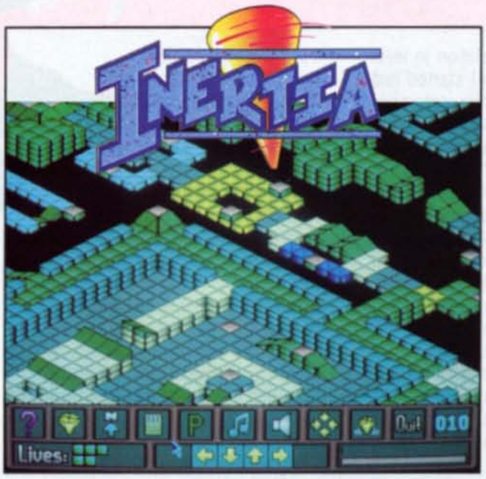
PRICE: A3000/Archimedes £29.95


A3000/ARCHIMEDES

A3000/ARCHIMEDES


A3000/ARCHIMEDES


A3000/ARCHIMEDES



INERTIA

Inertia is a totally original game with an immense landscape just waiting to be explored. Scattered (or rather fiendishly placed) around the landscape are many special tiles which need to be collected. Your craft floats freely around the landscape and you must exert forces upon it to guide its speed and direction.

You have a 3 dimensional viewpoint displaying a tiny fraction of the total playing area. There are walls, bridges, tunnels and ramps to negotiate and a host of mystery tiles with strange properties indeed.

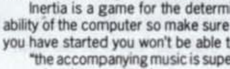
The Archimedes version is considerably enhanced and has superb digitised sound and background music. It even features full colour 3 dimensional maps of the 2 levels which are a joy just to wander around. You'll certainly be amazed at the size of the game and the variety within it.

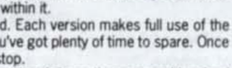
Inertia is a game for the determined. Each version makes full use of the ability of the computer so make sure you've got plenty of time to spare. Once you have started you won't be able to stop.

"the accompanying music is superb .... Inertia is another reasonably priced game for all ages. Highly recommended." .... Archimedes Review ***Micro User Oct' 90***

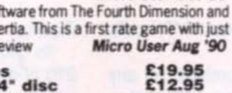
"We have come to expect quality software from The Fourth Dimension and the company has not let us down with Inertia. This is a first rate game with just the right mix of ingredients." .... BBC Review ***Micro User Aug '90***

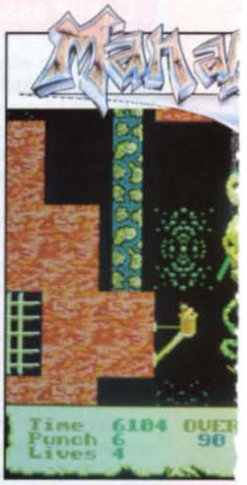
PRICE:		
	A3000/ Archimedes	**£19.95**
	BBC B/Master 5 1/4" disc	**£12.95**
	Compact 3 1/2" disc	**£13.95**
	BBC/Electron Cassette	**£9.95**


A3000/ARCHIMEDES


A3000/ARCHIMEDES

A3000/ARCHIMEDES


A3000/ARCHIMEDES



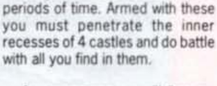
MAN-A

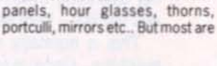
In the age when the castle was supreme it took dedicated warriors to overcome their defences, to loot and pillage, and finally to destroy.

You are armed with a mighty sword cast from the remains of a thunderbolt which fell from the sky many millennia ago. Also in your possession is a magic potion which makes you invincable to all for short periods of time. Armed with these you must penetrate the inner recesses of 4 castles and do battle with all you find in them.

As you progress you will discover many intriguing objects which can behave very strangely. Many are documented such as wooden panels, hour glasses, thorns, portculli, mirrors etc.. But most are

PRICE: A3000/A


A3000/ARCHIMEDES


A3000/ARCHIMEDES

ALSO AVAILABLE	A3000 AND ARCHIMEDES 31/2" DISC	BBC B AND MASTER 51/4" DISC	BBC AND ELECTRON CASSETTE	MASTER COMPACT 31/2" DISC
UIM (3D Action Adventure)	29.95	19.95	-	21.95
E-Type (3D Car Racing)	19.95	14.95	9.95	15.95
E-Type Designer	16.95	-	-	-
E-Type Extra 100 Miles	16.95	-	-	-
White Magic (Arcade Adventure)	19.95	12.95	9.95	13.95
White Magic 2 + Designer	19.95	12.95	9.95	13.95
Arcade Soccer	19.95	12.95	9.95	13.95
Holed Out (3D Golf)	19.95	14.95	12.95	15.95
Holed Out Extra Courses 1	16.95	11.95	9.95	12.95
Holed Out Extra Courses 2	16.95	11.95	9.95	12.95
Holed Out Designer	19.95	-	-	-

The Fourth Dimension, Dept 4444, 1 Percy Street, Sheffield, S3 8AU. Tel: (0742) 700661 or 769950

The Fourth Dimension

DEALERS

Most of our games are available from most good dealers.

If they don't stock them, then please give them a copy of this advert and tell them that they can easily buy them directly from us.

DIMENSION

A3000 ARCHIMEDES BBC B/MASTER ELECTRON

Arms
Score 90
Finish 5100
Energy 106

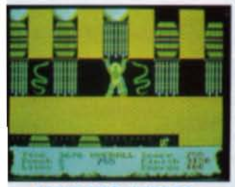
-ARMS

not. When you think your stuck, experiment end you'll discover properties you never knew existed.

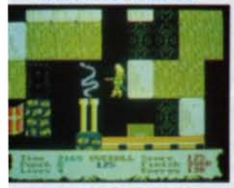
The subtle blend of arcade timing and adventurous puzzles make Man-At-Arms fiendishly addictive. You must plunder each of the 4 castles which, become increasingly "puzzling" as you progress. Your overall objective is to kill all foes with your mighty sword and to plunder as much of the most valuable treasure as you can carry.

Man-At-Arms is a fascinating challenge with superb sound effects and music. No attention to detail has been spared and you can be sure of many late nights for weeks to come..

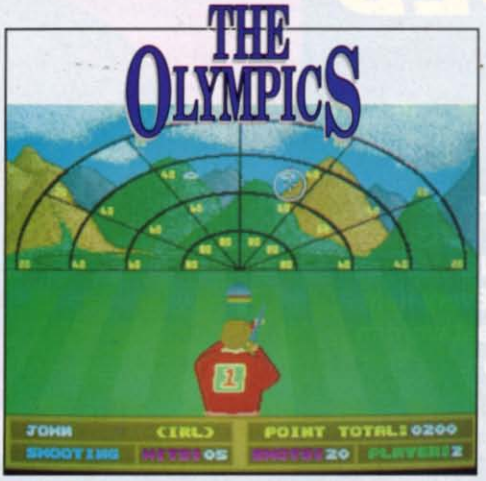
imedes £19.95



A3000/ARCHIMEDES



A3000/ARCHIMEDES



THE OLYMPICS

The Olympics is an experience which can be played by 1 to 8 players. It contains a superb piece of music, opening and closing ceremonies and 14 national anthems. When a player wins a gold medal the national anthem for his chosen country is played. Any World Records that you achieve can be saved to disc. With the click of a button all the relevant information concerning the record is automatically saved including your name, the exact time, day and date!

It is comprised of 6 main events: Diving, Shooting, Javelin, Swimming, Canoeing and Pole Vault. Some of these have several "sub-events" to choose from - there are 2 Shooting events, 12 Swimming events and 3 Canoeing events. These events have been chosen for maximum variety and enjoyment. They will "extract" all sorts of abilities: manual dexterity, timing, memory, perseverance, adaptability and above all guts!

The menu systems are controlled entirely with the mouse. As such they are extremely easy and quick to use. All events can be practised or competed individually, or altogether for maximum Gold, Silver and Bronze medals. You can also play all 6 events as a sort of "hexathlon" where points are awarded for each event - the player with the greatest number of points is deemed to be the winner. For each event - the player with the greatest number of points is deemed to be the winner.

"Compilation packages of sporting events may have been round on other machines for ages but the first one for the Arc is every bit as good .... VERDICT: A Gold Medalist" .... ***A&B Computing June '90***

"Excellent graphics .... Classy presentation .... and plenty of variety .... Should find favour with all members of the family. Definitely recommended." ....
Risc User June '90

PRICE: A3000/Archimedes £19.95

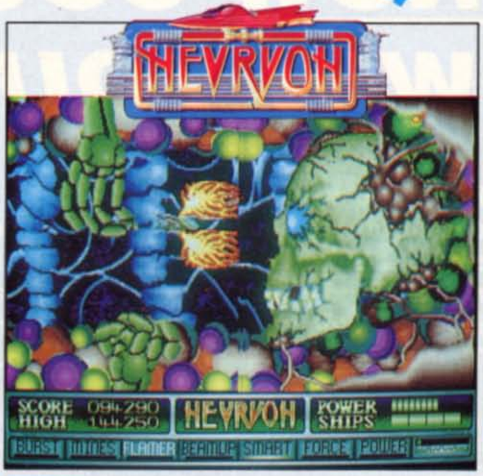
A3000/ARCHIMEDES

A3000/ARCHIMEDES

WORLD RECORDS

A3000/ARCHIMEDES

A3000/ARCHIMEDES



NEVRYON

This fast arcade game is disc based only and boasts 100k of graphics and game code for the BBC Micro and 2 discs of over 1.5 megabytes for the Arc. It is a fast sideways scrolling shoot'em up which features 8 levels of furious opponents and very varied and very detailed graphics.

Whilst the BBC Micro version is superb the Arc version has been considerably enhanced and is truly exceptional putting many arcade games to shame.

"If you think that games for the Archimedes are a bit second rate, then you're out of date because now there's Nevryon .... Nevryon features the best graphics and sound I have ever come across. All of the superb sprites are packed with amazing detail and the animation and scrolling are completely flicker-free. Sound 10, Graphics 10, Playability 10, Value for money 10, Overall 10." ....
Micro User Nov '90

"The 4th Dimension have come up trumps with another classic ....Graphics are superb .... The number of animated objects, missiles, scenery and details will put many an ST and Amiga to shame with the sheer power of the ARM chip. Who needs a blitter for fast action? .... to sum up, another unbelievable game that pushes the Archie standards even higher. Buy it now." .... ***Micronet Aug '90***

"The raw processing power of the Archimedes is fully exploited to provide a superb, flicker-free scrolling backdrop which includes large sprites, 256 colours and six levels of parallax scrolling .... Coupled with background music, explosions and over sixty on screen sprites excitement is guaranteed all the way .... Nevryon is the first true arcade style game for Archimedes owners to reach for their joysticks for." .... ***ACE '90***

PRICE:		
	A3000/ Archimedes	**£19.95**
	BBC B/Master 5 1/4" disc	**£14.95**
	Compact 3 1/2" disc	**£15.95**

A3000/ARCHIMEDES

A3000/ARCHIMEDES

A3000/ARCHIMEDES

A3000/ARCHIMEDES

HOW TO ORDER

COUPON

Simply fill in the coupon below and send with payment. (Cheque, P.O. or credit card details).

TELEPHONE

(0742) 700661 or 769950

24 hour service

VISA

SUPERFAST MAIL ORDER

- All orders are dispatched by first class post the SAME day we receive your order.
- We pay the postage and packaging (UK only).
- Overseas add £2 per item

TITLE	FORMAT (Cassette etc.)	COMPUTER	PRICE

- I enclose a cheque/P.O. or:
- Debit my Access/Visa card account:

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

TOTAL COST.... £

To: The Fourth Dimension, Dept 4444,
1 Percy Street, Sheffield, S3 8AU.

(BLOCK CAPITALS PLEASE)

Name

Address

Postcode

A QUICK PHONE CALL NOW COULD WIN YOU . . .

..the very latest stereo satellite TV system – and ALL of these valuable additions

Household names Grundig, Hitachi, Sky and Pace combined to bring you the prize of the year – a complete stereo satellite TV system, with EVERYTHING else you need to bring you all-round TV enjoyment! Every item is right up-to-the-minute. Here is the very last word in TV technology . . . all at the touch of a button.

To win the ENTIRE collection all you have to do is make a phone call and answer six simple questions. We've even presented you with a choice of answers! Then give your name and address...and the first correct answer pulled from our electronic sack will be the winner.

One item alone is worth £380 – the new Pace Receiver/Decoder & Dish. It's been hailed as the very last word in satellite technology.

Pace is Europe's largest manufacturer of satellite TV receivers and their SS9000 IRD has just about everything you might need – including a built-in videocrypt decoder for scrambled channels such as Sky Movies. It's all ready to receive the 16 extra channels of the new Astra 1b satellite – giving you 60 channels in all. It even incorporates a VCR timer that lets you pre-select different channels so that they can be recorded unattended! Remote control on-screen graphics make it simplicity to use. The 60cm dish that comes with your prize is made of a stylish black mesh which blends well with any surrounding.

These are the questions:

1 *Who invented the very first TV set?*
a) Bell in 1900 b) Baird in 1926 c) Einstein in 1929

2 *When did commercial TV start in Great Britain?*
a) 1955 b) 1969 c) 1970

3 *Which was the first Royal coronation to be screened on TV?*
a) Elizabeth II b) George VI c) Edward VIII

4 *Who wrote the theme tune to the award winning film, Chariots of Fire?*
a) Phil Collins b) Mike Oldfield c) Vangelis

5 *Which star of Wall Street is a famous son of a famous actor?*
a) Jason Connery b) Kiefer Sutherland c) Michael Douglas

6 *Mork appeared in Good Morning Vietnam. Who is he better known as?*
a) John Belushi b) Robin Williams c) Tom Conti

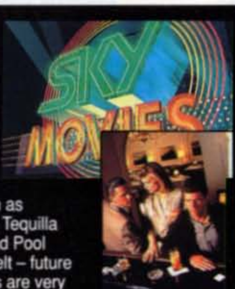
PLUS Latest stereo TV receiver

Grundig ST55-450
WORTH £530

With stereo sound, the popular 21in flat square tube PLUS remote control and teletext combine with Grundig's exceptional CTI for increased colour contour sharpness, electronically eliminating colour overlap to give you a much crisper picture. The sound quality is excellent with 2x8 watts of music power, two lateral wideband speakers and two frontal tweeters. Add to this a stereo base expansion and switchable sound channels and you have the very best in 1991 TV technology.

PLUS Watch a year of Sky Movies!

A year's viewing
WORTH £120



Here's a whole year's subscription to the Sky Movie Channel. Would you turn down a date with your favourite Hollywood star in your own home? With prestigious films such as Dangerious Liaisons, Tequilla Sunrise and The Dead Pool already under their belt – future features and releases are very exciting and far too good to miss.

PLUS Latest stereo video recorder

Hitachi VT-M740
WORTH £380

The new sleek design of this two-speed front-loading remote control VCR with four video heads hides a range of features including a title making facility and audio dubbing. You can also have clean still and variable slow motion PLUS digital auto-tracking enhancing the quality of sound and picture by automatically keeping the heads and tracks aligned. Other new features are the on-screen display facility and demonstration and a child lock – proof against little fingers. This really IS state-of-the-art in video recording.

To enter, simply phone: 0898 333 530

Calls cost 33p per minute cheap: 44p per minute at all other times. ***Contest ends December 31 1990*** **Database Publications/Legion**

Rebounding success!

Andrew Mellor's juggling act demonstrates the power of the BBC Micro

MUCH is made of how wonderful the Archimedes is, and how exciting and brilliant are the demos produced on it. Well, the BBC Micro isn't out of the running yet. Here's another excellent demo that shows off its muscles.

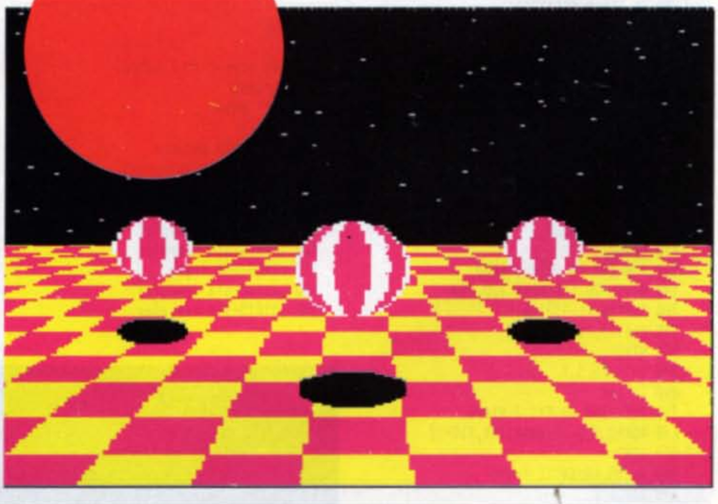
There are two programs, the first creating the data for the demo while the second actually runs it. Type in Listing I and ensure you've made no errors by using the checksums. Save, then run it. It takes about five minutes to run through and need only be used once to create a file called BalData.

Now type in Listing II, check it with the checksums and save it. When run it loads in the data file and, by using a small machine code routine, quickly displays each frame, giving the effect of movement.

The method of animation is a bit like that used in the Beeb's Revenge demo. However, instead of drawing and saving each complete screen, only the areas which are changing are saved – called Delta Compression – in this case where the balls are.

This conserves memory and allows more frames to be used, even though a full screen is displayed.

The second listing uses a short piece of machine code to take the graphics data from memory and display each area, but only where the picture has changed, stepping through each frame to provide the illusion of movement.



Listing I

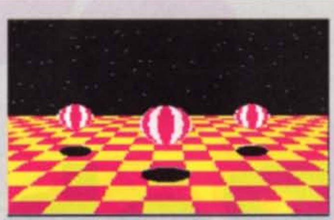
```
 10 REM  Perpetual Bouncing
 20 REM  Listing I - Create data
 30 REM  by Andrew Mellor
 40 REM  (C) The Micro User
 50 ON ERROR GOTO790
 60 MODE5
 70 VDU19,2,0;0;19,0,3;0;
 80 file=OPENOUT("BALDATA")
 90 FOR hgt=200 TO 0 STEP-50
100 CLS
110 PROCground
120 PROCshadow(632,200,100-(hgt/25))
130 PROCshadow(272,320,65-(hgt/35))
140 PROCshadow(976,320,65-(hgt/35))
150 PROCball(632,300+hgt,100)
160 PROCball(272,385+(hgt/1.4),65)
170 PROCball(976,385+(hgt/1.4),65)
180 PROCoutput
190 NEXT
200 CLOSE#file
210 END
220 :
230 DEFPROCground
240 GCOL0,1
250 FOR L=0 TO 1279 STEP80
260 MOVEL-20,550:MOVEL+20,550
270 PLOT85,(L-532)*5,0
280 PLOT85,(L-492)*5,0
290 NEXT
300 Y=1:GCOL3,1
310 REPEAT
320 FOR Y2=Y TO Y*1.2 STEP4
330 MOVE0,550-Y2:DRAW1279,550-Y2
340 NEXT
350 Y=Y*1.44:UNTIL Y>550
360 GCOL0,2
370 MOVE0,1023:MOVE1279,1023
380 PLOT85,0,500:PLOT85,1279,500
```

➤

```
 10 =    0 0 | 290 = 2C83 B | 570 = C433 6
 20 =    0 0 | 300 = 5BF9 E | 580 = 2C83 E
 30 =    0 0 | 310 = BFBA F | 590 = 2C83 3
 40 =    0 0 | 320 =  E5F B | 600 = ED0F 8
 50 =  A8B B | 330 = CC40 3 | 610 = 9719 E
 60 = AABE 6 | 340 = 2C83 E | 620 = 1203 1
 70 = 5C36 C | 350 = 3BC7 5 | 630 = 9FF8 7
 80 = 150F 4 | 360 = 334C 5 | 640 = EC47 6
 90 = 2A5A 5 | 370 = EB83 8 | 650 = 79D3 0
100 = 7A16 7 | 380 = 828F 4 | 660 = 7FBF 7
110 = 3BE4 C | 390 = ED0F 9 | 670 = BFBA 9
120 = F0D2 B | 400 = 9719 7 | 680 = 2358 2
130 = E543 3 | 410 = 998E 2 | 690 = 5971 3
140 = F688 1 | 420 = 334C 4 | 700 = 2C83 F
150 = 3DAE 4 | 430 = B4E0 F | 710 = 5831 7
160 = EEC3 D | 440 = 5919 3 | 720 =  2C4 1
170 =  791 8 | 450 = B4E0 3 | 730 = 2C83 1
180 = 7282 6 | 460 = FC5F 1 | 740 = ED0F 8
190 = 2C83 7 | 470 = 2C83 2 | 750 = 1AE5 4
200 =  3C5 9 | 480 = ED0F B | 760 = C482 D
210 = FD2E 0 | 490 = 9719 5 | 770 = 6C8D B
220 = 9719 5 | 500 = 8AB0 2 | 780 = 9719 9
230 = 5B65 5 | 510 = C183 B | 790 = 9EE3 D
240 =  32F E | 520 = 482F 3 | 800 = 8AFC 7
250 = C95B 7 | 530 = D451 7 | 810 = 6BDF 8
260 = 6CBE 3 | 540 = B4E0 3 | 820 = FD2E D
270 = F546 D | 550 = 5919 C |
280 = 41DB 4 | 560 = B4E0 7 |
```

➤

```
  390 ENDPROC
  400 :
  410 DEFPROCshadow(X,Y,R)
  420 GCOL0,2
  430 MOVEX,Y
  440 FOR ang=0 TO 360 STEP5
  450 MOVEX,Y
  460 PLOT85,X+R*SIN(ang*PI/180),Y+R*COS
(ang*PI/180)*COS(68*PI/180)
  470 NEXT
  480 ENDPROC
  490 :
  500 DEFPROCball(X,Y,R)
  510 col=1
  520 FOR ellipse=0 TO 19 STEP5.5
  530 col=(col+2)MOD4:GCOL0,col
  540 MOVEX,Y
  550 FOR ang=0 TO 360 STEP5
  560 MOVEX,Y
  570 PLOT85,X+R*SIN(ang*PI/180)*COS(ell
ipse*4.5*PI/180),Y+R*COS(ang*PI/180)
  580 NEXT
  590 NEXT
  600 ENDPROC
  610 :
  620 DEFPROCoutput
  630 RESTORE
  640 FOR ballnum=1 TO 3
```



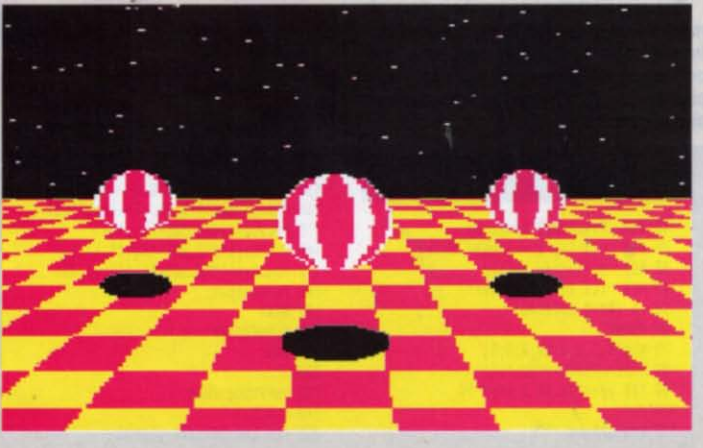
```
650 READ memstrt,memfin,rowlen
660 memloc=memstrt
670 REPEAT
680 FOR byte=0 TO rowlen
690 BPUT#file,?(memloc+byte)
700 NEXT
710 memloc=memloc+320
720 UNTIL memloc=memfin
730 NEXT
740 ENDPROC
750 DATA &68C0,&7A40,55
760 DATA &6870,&74F0,39
770 DATA &6920,&75A0,39
780 :
790 CLOSE#0
800 MODE7
810 REPORT:PRINT" at line ";ERL
820 END
```

Listing II

```
 10 REM  Perpetual Bouncing
 20 REM  Listing II - Animate
 30 REM  by Andrew Mellor
 40 REM  (C) The Micro User
 50 ON ERROR GOTO1240
 60 MODE5:HIMEM=&3000
 70 VDU23;11,0;0;0;0
 80 VDU19,2,0;0;19,0,3;0;
 90 *LOAD BALDATA 3000
100 PROCground
110 PROCstars
120 PROCassem
130 CALL code
140 END
150 :
160 DEFPROCground
170 GCOL0,1
180 FOR L=0 TO 1279 STEP80
190 MOVEL-20,550:MOVEL+20,550
200 PLOT85,(L-532)*5,0
210 PLOT85,(L-492)*5,0
220 NEXT
230 Y=1:GCOL3,1
240 REPEAT
250 FOR Y2=Y TO Y*1.2 STEP4
260 MOVE0,550-Y2:DRAW1279,550-Y2
270 NEXT
280 Y=Y*1.44:UNTIL Y>550
290 GCOL0,2
300 MOVE0,1023:MOVE1279,1023
310 PLOT85,0,500:PLOT85,1279,500
320 ENDPROC
330 :
340 DEFPROCstars
350 GCOL0,3
360 FOR N=0 TO 100
370 PLOT69,RND(1280),RND(512)+512
380 NEXT
390 ENDPROC
400 :
410 DEFPROCassem
420 dataptr=&70:scrnptr=&72
430 frmxsize=&74:frmysize=&75
440 frmcount=&76:code=&900
```

SUBSCRIBE NOW!
If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*.

```
450 FOR pass=0 TO 2 STEP2
460 P%=code
470 [OPT pass
480 .start
490 LDA#0:STA dataptr
500 LDA#&30:STA dataptr+1
510 LDA#5:STA frmcount
520 .scnloop
530 LDX#56:STX frmxsize
540 LDY#14:STY frmysize
550 LDA#0:JSR frame
560 LDX#40:STX frmxsize
570 LDY#10:STY frmysize
580 LDA#2:JSR frame
590 LDX#40:STX frmxsize
600 LDY#10:STY frmysize
610 LDA#4:JSR frame
620 JSR delay
630 DEC frmcount:BNE scnloop
640 LDA#1:STA frmcount
650 .scnloop2
660 LDA dataptr:SEC:SBC#&60
670 STA dataptr
680 LDA dataptr+1:SBC#&C
690 STA dataptr+1
700 LDX#56:STX frmxsize
710 LDY#14:STY frmysize
720 LDA#0:JSR frame
730 LDX#40:STX frmxsize
740 LDY#10:STY frmysize
750 LDA#2:JSR frame
760 LDX#40:STX frmxsize
770 LDY#10:STY frmysize
780 LDA#4:JSR frame
790 JSR delay
800 INC frmcount:LDA frmcount
```



```
810 CMP#4:BNE scnloop2
820 BIT&FF:BMI esc
830 JMP start
840 .esc RTS
850
860 .frame
870 TAY
880 LDA table,Y:STA scrnptr
890 LDA table+1,Y:STA scrnptr+1
900 .frmloop
910 LDY frmxsize:DEY
920 .rowloop
930 LDA(dataptr),Y:STA(scrnptr),Y
940 DEY:BPL rowloop
950 LDA dataptr:CLC
960 ADC frmxsize:STA dataptr
970 LDA dataptr+1:ADC#0
980 STA dataptr+1
990 LDA scrnptr:CLC:ADC#64
1000 STA scrnptr
1010 LDA scrnptr+1:ADC#1
1020 STA scrnptr+1
1030 DEC frmysize:BNE frmloop
1040 RTS
1050 .table
1060 OPT FNequw(&68C0)
1070 OPT FNequw(&6870)
1080 OPT FNequw(&6920)
1090 .delay
1100 LDA frmcount:ASL A
1110 TAY:INY:INY:INY
1120 .dloop
1130 TYA:PHA
1140 LDA#19:JSR&FFF4
1150 PLA:TAY:DEY:BNE dloop
1160 RTS:]
1170 NEXT
1180 ENDPROC
1190 :
1200 DEFFNequw(N%)
1210 ?P%=N% MOD256:P%?1=N% DIV256
1220 P%=P%+2:=pass
1230 :
1240 MODE7
1250 IF ERR<>17 REPORT:PRINT" at line "
;ERL
1260 END
```

Get it right ✓

```
  10 =    0 0 | 280 = 3BC7 9 | 550 = 6833 9 |               |
  20 =    0 0 | 290 = 334C 0 | 560 = B0AD 9 |               |
  30 =    0 0 | 300 = EB83 6 | 570 = 5015 D |               |
  40 =    0 0 | 310 = 828F 4 | 580 = C880 8 |               |
  50 = 9CC6 6 | 320 = ED0F B | 590 = B0AD 1 |  820 = C0D8 A | 1050 = 8902 C
  60 = 7C8D 2 | 330 = 9719 A | 600 = 5015 B |  830 = 48C9 8 | 1060 = C057 6
  70 = A427 4 | 340 = 46DC 3 | 610 = 3974 F |  840 = FCBB C | 1070 = C49F 0
  80 = 5C36 9 | 350 = 236D 7 | 620 = 40CE A |  850 =    0 C*| 1080 = 59DB 8
  90 = 2FBE 7 | 360 = AC6F 8 | 630 = C871 D |  860 = 23C1 7 | 1090 = F949 5
 100 = 3BE4 D | 370 = 7C7B B | 640 = B32A 1 |  870 = 772F 7 | 1100 = 4382 C
 110 = EDB8 2 | 380 = 2C83 C | 650 = AE08 7 |  880 = A1D5 9 | 1110 =  61B 0
 120 = B854 8 | 390 = ED0F C | 660 = D107 1 |  890 = B020 8 | 1120 = E148 9
 130 = AF58 3 | 400 = 9719 4 | 670 = 7CFB E |  900 = C505 A | 1130 = 6E12 E
 140 = FD2E 4 | 410 = 1330 A | 680 = F662 9 |  910 = BB69 2 | 1140 = DC80 C
 150 = 9719 F | 420 = 8139 A | 690 = EF2E 3 |  920 = 258B F | 1150 = 1AD8 5
 160 = 5B65 2 | 430 = D48B 9 | 700 = 1536 7 |  930 = F626 9 | 1160 = 88E3 5
 170 =  32F 2 | 440 = 3111 F | 710 = ADB0 E |  940 =  996 9 | 1170 = 2C83 E
 180 = C95B C | 450 = 5E7C 0 | 720 = 6833 C |  950 = F9F2 A | 1180 = ED0F 2
 190 = 6CBE A | 460 = 3FB3 F | 730 = B0AD C |  960 = 99BF F | 1190 = 9719 F
 200 = F546 F | 470 = 4E48 0 | 740 = 5015 9 |  970 = 7665 C | 1200 = 7392 D
 210 = 41DB D | 480 = 3208 6 | 750 = C880 D |  980 = EF2E D | 1210 = 142D B
 220 = 2C83 4 | 490 = 276A 3 | 760 = B0AD 2 |  990 = 4C00 1 | 1220 = 237D 6
 230 = 5BF9 6 | 500 = 9BE0 9 | 770 = 5015 E | 1000 = C0EF 7 | 1230 = 9719 C
 240 = BFBA B | 510 = 4E8F 3 | 780 = 3974 8 | 1010 = 3A13 7 | 1240 = 8AFC E
 250 =  E5F 8 | 520 = 3A2F 7 | 790 = 40CE 8 | 1020 = E6FB D | 1250 = A620 3
 260 = CC40 3 | 530 = 1536 4 | 800 = E285 B | 1030 = A72B 6 | 1260 = FD2E 9
 270 = 2C83 E | 540 = ADB0 9 | 810 = 3B4D D | 1040 = 9843 5 |
```

ATTENTION ALL GAMES PLAYERS!

Do you wish that you could use a standard Joystick on the Archimedes? Now you can......

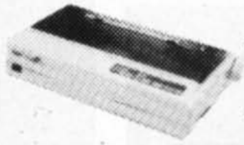
The Joystick Interface
from The Serial Port

The Joystick Interface plugs into the parallel printer port - a switch selects the oystick or printer port. No special support is necessary for The Joystick Interface so it will work with virtually any game. It comes complete with simple to use software that allows it to mimic key presses and includes control modules for many existing games. It can even mimic the mouse! Also supplied is a programming language that allows more complex modules to be created eg using two joysticks at once for a game such as Conqueror.

Available for only **£23.95** inc VAT & P+P from most good dealers or direct from ourselves:

The Serial Port Burcott Manor Wells Somerset BA5 1NH
el: 0243 531194 Fax: 0243 531196

WeServe of Hampshire
Educational Specialist



Star LC10 Mono
£149.00 (£129.56 + VAT)

Colour Dump Rom £45.60 inc.

Star LC200 Colour
£209.00 (£181.74 + VAT)
(with Cable and Paper)

STAR LC 2410
with cable & paper
£225.00 (£195.65+VAT)

STAR LC 24200
with cable & paper
£255.00 (£221.74+VAT)

STAR XB 2410
with cable & paper
£455.00 (£395.65+VAT)

CITIZEN 120D+
with cable & paper
£125.00 (£108.67+VAT)

PRINTER RIBBONS

	Ex VAT	Inc VAT
LX800 & FX800 Print Ribbon	2.30	2.65
LC10 Print Ribbon	4.00	4.60
120D Print Ribbon	4.00	4.60
Taxan/Canon Ribbon	3.22	3.70
Juki 6100 Print Ribbon	1.30	1.50

Phone for full range 100 + original & Compatible ribbons + Bulk discounts

UPGRADES/8271

	Ex VAT	Inc VAT
27128A 250nS 12.5v	3.00	3.45
2764 250nS 12.5v Eprom	2.77	3.19
8271 controller	38.26	44.00
6264 LP 150nS	4.00	4.60
Acorn 8271 DFS	45.22	52.00
Acorn 1770 DFS	45.22	52.00
A410/1 40Mb Hard Disk	246.00	282.90
A410/1 30Mb Hard Disk	190.00	218.50
A410/1 1M RAM upgrade	56.52	65.00
A3000 Ext. Drive I/F	13.00	14.95
A3000 1M RAM upgrade	68.70	79.00
Acorn Trackerball	39.00	44.85
A3 Concept Keyboard	140.00	161.00
Master Keyboard	51.30	59.00

A3000 1M UPGRADE
1m fitted upgradeable to 4m
£79.00 (£68.70+VAT)

MONITORS

	Ex VAT	Inc VAT
Philips CM Stand	18.26	21.00
Philips BM7502 Green	71.30	82.00
Philips BM7522 Amber	60.00	69.00
Philips TV Tuner	60.00	69.00
Microvitec 1431	173.04	199.00
Microvitec 1451	216.52	249.00
NEC Multisync 3D	456.00	524.40

(Prices inc. BBC Cable)

Philips CM8833
£229.00 (£199.31 + VAT)

DISKETTES (100% Error free)

(lifetime warranty)	Ex VAT	Inc VAT
10 Banana Reversible	8.65	9.95
10 3.5" D/S 135tpi	5.60	6.44
50 3.5" D/S 135tpi	26.03	30.25
100 3.5" D/S 135tpi	52.00	59.80
10 96tpi D/S D/D in box	5.17	5.95
50 96tpi D/S D/D in boxes	17.17	19.75
100 96tpi D/S D/D in boxes	32.09	36.90
10 3M High Density 3.5"	25.00	28.75
10 3M High Density 5.25"	10.00	11.50
100 Disc Box 5.25"+ lock	6.52	7.50

PANASONIC KXP1081
with cable & paper
£142.00 (£123.48+VAT)

PANASONIC KXP1180
with cable & paper
£152.00 (£132.17+VAT)

PANASONIC KXP1124
(24 pin) with cable & paper
£245.00 (£213.04+VAT)

EPSON + LQ400
(24 pin with cable & paper)
£227.00 (£197.39+VAT)

PRINTERS/CABLES/Etc.

	Ex VAT	Inc VAT
Panasonic KXP1180	132.17	152.00
NEC P6+	346.96	399.00
Panasonic KXP4420	899.00	1033.85
Citizen Swift 24	242.61	279.00
Juki 6300 Daisy Wheel	299.00	343.85
Amstrad LQ3500di	190.43	219.00
1.5m (4 foot) BBC cable	4.00	4.60
2.0m (6 foot) BBC cable	6.00	6.90
IBM/Archimedes cable 1.8M	6.00	6.90
LX/LQ Sheet Feeder	62.61	72.00
LC10/LC2410 Sheet Feeder	51.30	59.00
2 way Printer Switch	18.00	20.70
Printer Dust Covers	4.00	4.60

ROMS/SOFTWARE

	Ex VAT	Inc VAT
Inter-Word Rom	35.65	41.00
Inter-Base Rom	46.96	54.00
Wordwise Plus Rom	37.39	43.00
MEGA 3 Rom	71.30	82.00
Spell Master Rom	40.00	46.00
View 3 Rom	40.00	46.00
DTP-Acorn	120.87	139.00
ViewStore Rom	35.65	41.00
OverView I & II	64.35	74.00

Phone for BBC/Archimedes Software catalogue 100's of titles inc. Educate

A410/1+4m RAM + 40m hard disc
£1399.00 (£1216.52+VAT)

A3000 + 2m
£679.00 (£590.43+VAT)

A3000 LC + 2m
£799.00 (£677.39+VAT)

VOLTMACE JOYSTICKS

Delta 14B	12.61	14.50
Delta 3B single	11.26	12.95
Delta 3B twin	17.35	19.95

5¹/₄DISC DRIVES

	ExVAT	InVAT
Cumana CSX100 40T	74.78	86.00
Cumana CSX400 40/80T	89.57	103.00
Cumana CDX 800S 40/80T	175.65	202.00
Cumana CD800S 40/80T	195.65	225.00
MD400A 400k No PSU 40/80T	78.26	90.00
MD400B 400k & PSU 40/80T	88.70	102.00
MD802C 800k No PSU 40/80T	156.52	180.00
MD802E 800k & PSU 40/80T	169.57	195.00
MD802D 800k & stand 40/80T	190.43	219.00

Phone for Hard discs + Torch

Phone for our 36 page catalogue
EDUCATIONAL & GOVERNMENT ORDERS WELCOME
All products have a 30 day money back & 12 month warranty
Prices subject to variation without prior notification
We are closed Saturday afternoons
Postage 92p (80p + VAT) Securicor £6.90 (£6.00 + VAT)

WeServe
Larger items delivered by Securicor

Micro Dept.
40-42 West Street
Portchester,
Hants.
PO16 9UW
Tel: 0705 325354

FREE
with every computer we sell...
...our expertise!

If you are buying a new Archimedes or Master Series computer, you don't expect to know all about it from day one. That's where we come in. We don't leave our customers high and dry with their problems – they know they can rely on us to get them out of trouble. Whether it's hardware or software, we're the people who know.

Acorn R140 Unix Work-station

Cambridge Z88 Portable

THE DATA STORE

6 Chatterton Road, Bromley, Kent
Tel: 081-460 8991. Fax: 081-313 0400
(closed Wednesday)
An old-fashioned specialist computer shop

WHAT DO THESE PIGS HAVE TO DO WITH USING ANY JOYSTICK ON YOUR ARCHIMEDES/ A3000?

Well, not a lot, really. I mean, you can't plug a joystick into a pig. But, with RTFM's **ARC/A3000 Game Controller,** you can plug up to two 9 pin Atari® type joysticks into your Archimedes or A3000. All new games (where applicable) from **4th Dimension** (starting with **Nevryon** and **Chocks Away)** and RTFM (starting with PON) will support joysticks, and we even give you a disk to convert loads of other games, like Interdictor, **Quazer,** Pacmania, Pipemania, Caverns, **E-Type,** Manchester United FC, Mad Professor Mariarti, Repton 3, Talisman, Thundermonk, Ibix the Viking, Hoverbod, Orion, White Magic, Worra Battle, **Interdictor 2** and so on.... Full instructions are provided for using the interface in your own programs.

The board fits **inside** your machine, where the Econet® board would go if you had one, so it doesn't take up space by hanging off the back of the machine, and the hardware will not clash with your software protection dongles. In addition, all your podule slots remain free. All this for only £34.99!

We also have games: **Pon** (£17.95, seriously cute, and 8/10 from A&B), **Brixx** (£17.95, the most irritating tune in the world, and A&B gave it 7/10), **Slappit** (the ice hockey of the future) and **THE ARC/A3000 CHRISTMAS BOX** (£19.95, pack includes: **PON IN WINTER LAND, BRIXX** and **ZAP THE RED WEIRDOS FROM MARS.)** All available **now!**

RTFM, 43 Hill Street, St Helier, Jersey
✆ (0534) 67870, Fax (0534) 68996.

THE MAIN DIFFERENCE BETWEEN INTERDICTOR 2

AND A MODERN JET FIGHTER...

...ABOUT £20,000,000 (inc vat)

You'll also find a modern jet fighter a little too large for your tabletop and, unlike Interdictor 2, it requires around 25 groundstaff to get it airborne.

Best to stick with flight simulation, we think. And with that in mind, allow us to introduce Interdictor 2. It is written by the same people who brought you Interdictor but it's bigger, better, smoother and (believe it or not) faster.

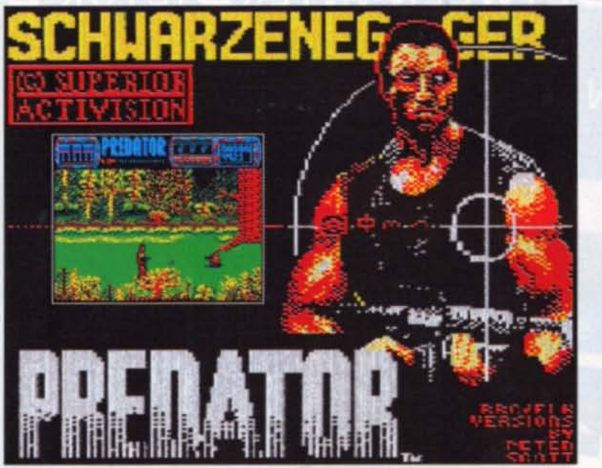
It has a more realistic aircraft model, an easy to fly training mode, a new navigation system allowing route planning, way point setting and mission pre-planning. Added to this is LOCSAC a new local Situational Awareness Computer that allows you to monitor the local situation. You'll fly over 10,000 square kilometres of trees, mountains, roads, rivers, railways, lakes and much, much more.

The main scenario contains nine sub scenarios of varying difficulty. There are more types of air and ground vehicles with more weapons. Enemy aircraft have more in-built intelligence and defence, and let's not forget one vital point; they're all out to get you. And there lies the real difference between a genuine jet fighter and Interdictor 2.

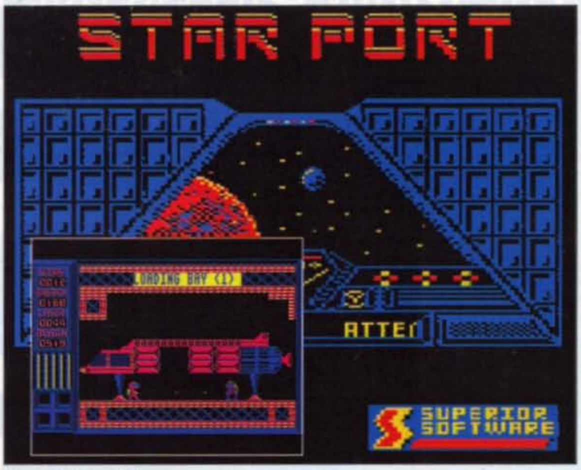
If you get shot down, with Interdictor 2, you simply start all over again. And, by the way, Interdictor 2 only costs **£34.95 (inc VAT).**

CLARES
MICRO SUPPLIES

98 Middlewich Road, Rudheath, Northwich, CHESHIRE CW9 7DA.
Telephone: 0606 48511 Fax No: 0606 48512



Schwarzenegger – Uzi 9mm maestro



Intergalactic medicine man

PLAY IT AGAIN

Product: Play it Again Sam 14
Price: £9.95 (tape) £11.95 (disc)
Supplier: Superior Software, PO Box 6, Brigg, South Humberside DN20 9NH.
Tel: 0652 585

SUPERIOR'S long running affair with the BBC Micro continues to go from strength to strength as Play It Again Sam 14 hits the screens. Three full-price best sellers and an all-new arcade adventure constitute one of their best compilations so far.

The first stars that master of monosyllabic mayhem Arnold Schwarzenegger in one of his more interesting films, **Predator**. As big Arnie you enter uncharted jungle and pit your muscle and terrestrial firepower against the cunning and extraterrestrial weaponry of the Predator.

Four horizontally scrolling levels lay between you and the alien, so the chances of spotting him are pretty slim. However, the chances of him finding you are very good, as you will soon discover.

Much of your time is spent gunning down enemy troops and flocks of vultures, but every now and then the screen will darken and a cluster of three dots will appear. These signal your impending death as they are the Predator's gun sights.

All things considered, the film's atmosphere is recreated to good effect in this top notch blaster.

Trouble ahead

Ballistix is the 1990s version of a game called Crossfire, a hit way back in the dark ages when people thought that Pong was a pretty neat video game.

By firing balls at a puck you drive it towards your opponent's goals. Score three goals and you win, concede three and you lose. Simple.

Variety is introduced with the addition of walls around which you must guide the puck, and tokens that initiate random events when hit.

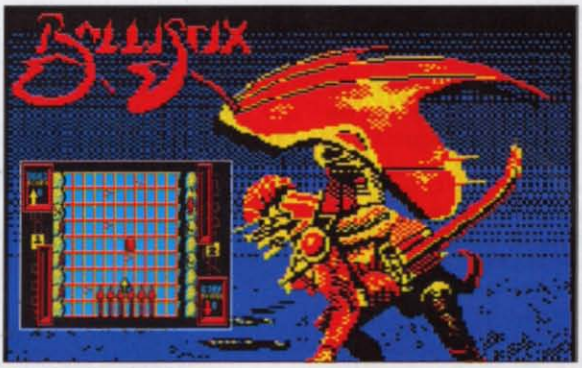
Ballistix is a fun game requiring a little more thought than you might first imagine – though you soon find out that the rapid fire button technique is the quickest way to notch up a hat trick of own goals.

Moving on from one ball game to another we have **Superior Soccer**, which mixes the strategy and tactics of Player Manager with the best action of the arcade football games.

In true to life fashion the management side of the game is dominated by money. Without cash you cannot afford to buy fresh, skilful and strong players, and without such players you cannot pull in big enough crowds to earn the big money.

You must therefore play a waiting game, resting your good players when necessary and slowly work your way up though the divisions.

Choosing to play the arcade game only, dispenses with the league table and leaves you free to play soccer against the computer or a human opponent. The micro is equipped with 10 skill levels and on most of these you'll be beaten.



Catch it on the rebound

Blast the aliens to smithereens

In my experience the quickest way to the top of the division is to concentrate on the management game and leave play to the computer. You'll score more goals that way.

Game number four is called **Star-Port** and is the latest arcade adventure game from the author of Quest and Camelot. The program follows the usual format for this genre: Search the Star-Port to find five cases of medical supplies.

While doing this you have to also destroy 500 points worth of robot guards and solve a series of unreasonably difficult numeric puzzles against the clock.

Star-Port is a good game that holds its own in this illustrious company, and is in no way a stocking filler.

Once again, Superior can do no wrong in their continuing domination of the BBC/Electron software field.

Jon Revis

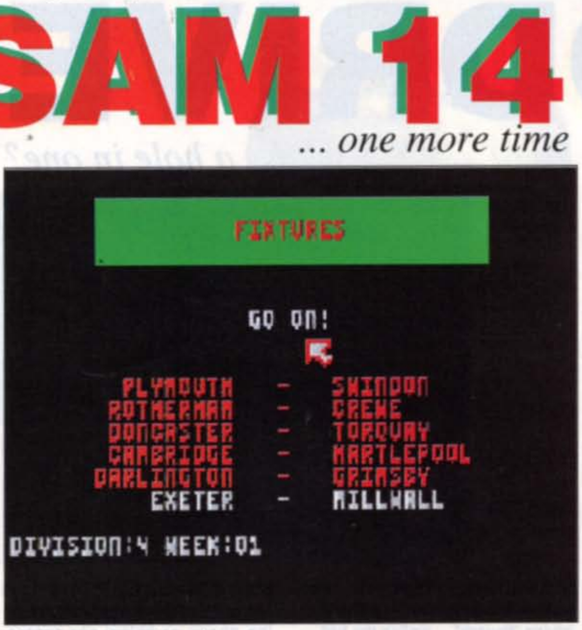
Sound	*6*
Graphics	*9*
Playability	*9*
Value for money	*9*
Overall	*8*

SUPERIOR SOCCER
SUPERIOR SOFTWARE
ACORNSOFT

Kicking off with Superior Soccer

SAM 14

... one more time



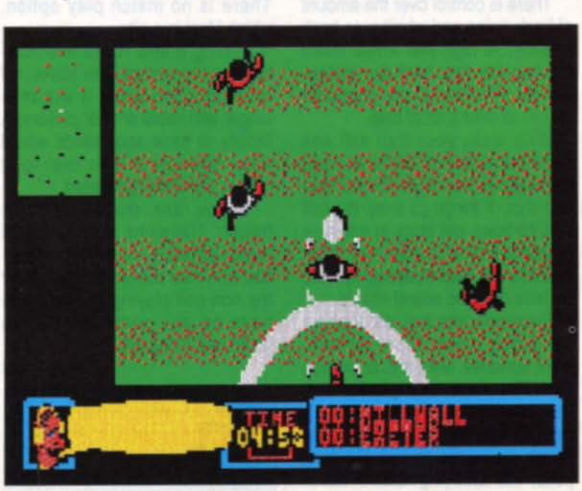
FIXTURES

GO ON!

PLYMOUTH - SWINDON
ROTHERHAM - CREWE
DONCASTER - TORQUAY
CAMBRIDGE - HARTLEPOOL
DARLINGTON - GRIMSBY
EXETER - MILLWALL

DIVISION:4 WEEK:01

Checking out the week one fixtures



Man on!

PON!

...mayhem on the menu

Price: £17.95
Supplier: RTFM, 43 Hill Street, St Helier, Jersey JE2 4UA.
Tel: 0534 67870
Requirements: BBC A3000 or Archimedes series

OF all the strange scenarios, none have sunk quite so low as to suggest that the player is a mutated cornflake who has escaped the breakfast horror to find himself in the land of Yosh. Not only that, but he is now running for his life from the evil Tonneh.

Well, Pon is said distressed cereal, and for him to return to his proper place on the breakfast menu he must get through the dimension gate.

I don't quite know which is the worst fate, but as death seems more imminent at the hands of the Tonneh, perhaps the breakfast option is a little more open. A cheery but long title sequence with music gives way, after hammering the spacebar, to level one. A beautiful scrolling piece of text passes, assuring you that you are at the beginning. Then you are left to the real thing.

There's a time indicator on the left of the screen and the landscape moves in a slick vertical scroll. Consequently all the screens are in a strip form and Pon is limited to sideways scampering within the bordered area.

You objective is to turn all the green and grey tiles to red while avoiding your homicidal adversaries in this strange land. Should you meet them head on they will drain your time bar.

However, these are not the only hazard you are likely to meet. Among the chartered paths are more taxing squares, such as ones which look like crazy-paving but crumble on touch, one-way arrows divert you into a cul-de-sac, lurking tombstones are inevitably fatal and are sometimes cunningly partnered with slippery blue icy blocks.

You get a real sense of achievement as Pon whizzes around the screens – the tiles recede to red in a relaxing blotchy way and all the time our rancid hero winks and blinks his own body language.

A word to the wise – beware mysterious items that manifest themselves before you. Should you innocently jog up to and collect a poison bottle, Pon's face drops as nice red tiles become green.

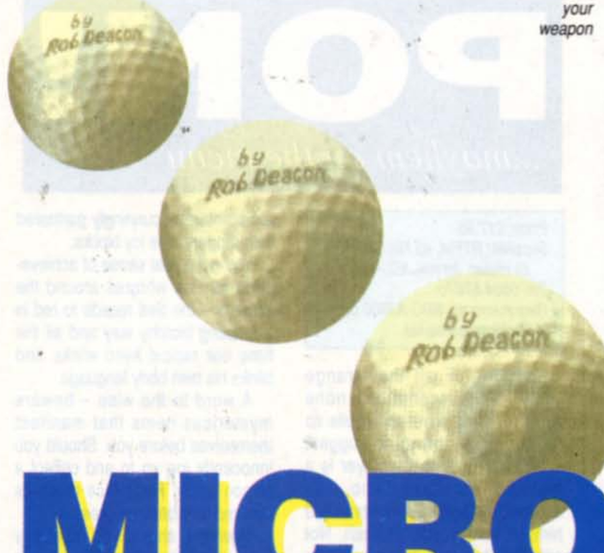
However, should you meet any fellow nutritional cornflakes a touch of cannibalism will replace any of the three lives you may have mislaid earlier. Also an extremely useful tile allows you to short cut to areas to which you might not have access. Though the Tonnehs are tenacious and mean they can be quashed by finding an exploding stone or more dexterously stepping on to a crumbling section just as a furry foe approaches. Beware of the generator machines at higher levels too – they regenerate even nastier cousins.

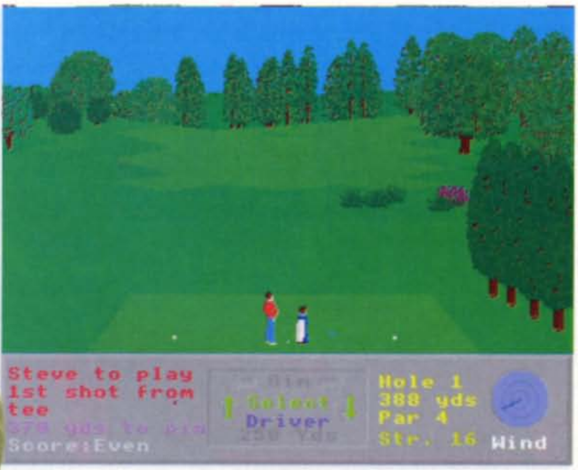
The arrangement of the game is set to lull you into a false sense of security. You should be able to whiz through the first level, but then a more considered and strategic approach is required.

I could critise the graphics and simplistic game format, but I'm not going to as nothing detracts from the all-out, racing pace and fun. Only the addition of a jump level option and a pause key could enhance Pon. The music is swell and I don't even miss any sound effects.

Matthew Ridd

Sound	*9*
Graphics	*7*
Playability	*9*
Value for money	*8*
Overall	*9*




Choose your weapon

Steve to play
1st shot from
tee
Score:Even

MICRODRIVE

... a hole in one?

Price: £19.95
Supplier: CIS, 8 Herbrand Street, London WC1N 1HZ.
Tel: 071-833 4023
Requirements: BBC A3000 or Archimedes series

NO! This has nothing to do with cars or discs – it is, in fact, a new golf program. You can choose to play either the Lauren Hills or San Rivero course and a quick overview of each can be obtained before the selection.

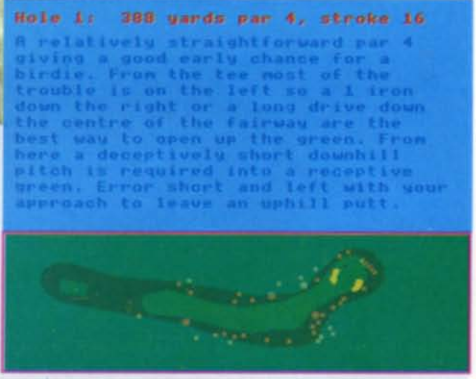
Then the names of up to four players are entered, allocating them a skill factor and selecting whether they be left or right handed. Next choose which hole to start from, and let action begin.

The display shows a 3D view down the fairway. Hazards, in the form of bunkers, water and out-of-bounds areas, are clearly indicated. By watching the way the screen is drawn – it takes only a few seconds – some insight into the position of hills and valleys can be gained.

Also on screen is a wind strength and direction meter, plus information about the length of the hole and how far from the flag your ball lies. A helpful – but invisible – caddy will already have selected a possible club for you. You can, of course, make your own decision. There is onscreen advice on the hitting distance for each club.

At any time a plan of the hole can be called up, along with advice on methods for tackling problems. Switching between this screen and the 3D view is instant.

After mulling over the options and selecting a club you start your back swing and – with a satisfying "thwack" – wallop the ball.


Hole 1: 388 yards par 4, stroke 16
A relatively straightforward par 4 giving a good early chance for a birdie. From the tee most of the trouble is on the left so a 1 iron down the right or a long drive down the centre of the fairway are the best way to open up the green. From here a deceptively short downhill pitch is required into a receptive green. Error short and left with your approach to leave an uphill putt.

On-line hole descriptions available

There is control over the amount of back swing and whether to hook or slice. At high skill levels these touches are very hard to manage. On the easy level, the computer seems to offer a lot of help.

With luck, your ball will sail down the middle of the fairway and so select a next club for the second shot. If things go awry, the ball may hit trees, get stuck in a bunker or perhaps land in the water. Most hazards are accompanied by very realistic digitised sound effects.

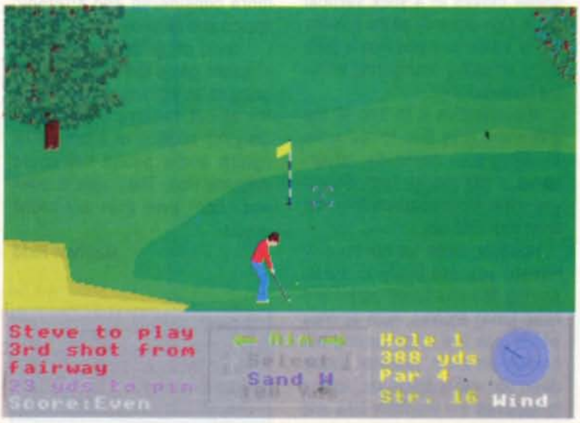
Eventually the ball will land on the putting green. These far-from-level surfaces are hard to portray on a 2D screen. Unlike Holed Out, you retain the 3D viewpoint and it's essential to watch how they are drawn if you are to sink the long putts. The satisfying noise of ball in hole makes the effort really worthwhile. When all players have holed out, a score sheet is shown indicating above or below par scores. There is no match play option, which I feel is a pity.

Playing a solo round and scoring close to par will take about half an hour. Obviously, it will take longer with more or poor players. A facility to save scorecards would have been useful so that long games could be completed.

These are minor quibbles though. The game is an excellent implementation, with good graphics, and has proved great fun for my non-golf playing family. If you have no golf game MicroDrive could well fit the bill.

Rog Frost

Sound	9
Graphics	8
Playability	10
Value for money	8
Overall	9


Steve to play
3rd shot from
fairway
Score:Even

Getting on to the green

BRIXX!

Product: Brixx!
Price: £17.95
Supplier: RTFM, 43 Hill Street, St Helier, Jersey JE2 4UA.
Tel: 0534 67870
Requirements: BBC A3000 or Archimedes series

... one more wall of bricks

OLD favourites tend to die only to be resurrected a couple of years later. While the scrolling text on the high-score table tries its best to convince you that you are saving the space/time continuum, this is yet another version of Breakout for the Archimedes.

Control of your trusty bat is by mouse only and you will need to develop a swift hand movement to return a deflected ball successfully because the mouse sensitivity is not controllable.

Each screen has its own title and unique mosaic of multicoloured bricks to hack away at. The ball glides across the embellished backgrounds with flicker-free ease and bounces off objects at unusual angles.

The shade of the brick donates whether it will vanish on impact, or merely darken a little before disappearing after another hit. Some hues of block are indestructible and will block your path as you fight to reach the remaining rectangles.

Random capsules descend from the minced masonry – catch them before they disappear and each will affect the gameplay. Some are beneficial and others are not – that trick of reversing the controls I find extremely irritating.

I rather like the sticky bat which offers a little timein which to aim your projectile, while the laser capsule is vital to complete certain levels. Other capsules widen the bat, excite or dull the ball's speed, or build a temporary fence to save you all those volleying dashes – this is a great option when coupled with the multi-ball effect, by the way you only have to hit the white ball.

Sets of four bopping aliens provide a relentless cabaret as they appear in various positions on the screen and then dance back and forth, sending your best shots astray.

It is worthwhile taking a little time to shoot at them, as they deflect the ball disastrously in addition to being difficult to aim around.

An editor is provided in case you tire of the action. Flexing your artistic talent you can order ranks of bricks as you wish, finished arrangements being titled and set against a textured background.

Options such as copying, swapping, cutting and pasting are all available.

Strangely, all screens can only be saved as one datafile and on the game disc.

If your designs ovewrite the original you can retrieve it using the default screens icon.

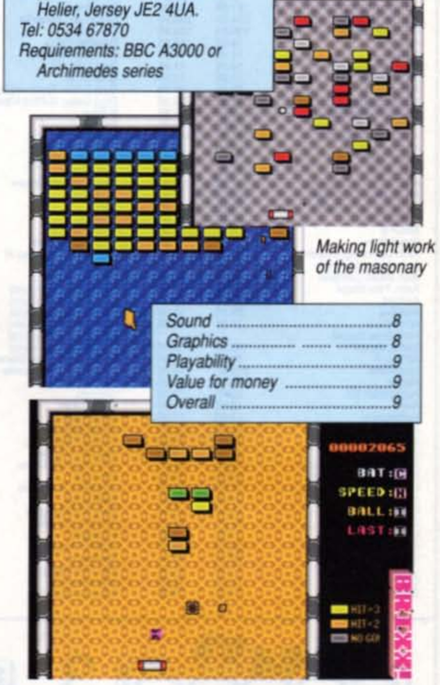
This is a very limiting approach and means that it is impossible to swap home-designed screens with your friends.

The print option does little more that drop basic text screen information to the printer – a screen dump would have been more acceptable.

Sound is where Brixx! scores highest. Sampled messages are relayed each time you begin play or are returned to the first screen. You can kill sound and music, but there is no sanity-saving skip level option. Despite the niggles, Brixx! proves that the simplest concepts are sometimes the best.

For a little addictive fun, you could do worse.

Matthew Ridd



Making light work of the masonary

Sound	8
Graphics	8
Playability	9
Value for money	9
Overall	9

MEMORY MAGIC

Price: £15.95
Supplier: CIS, 8 Herbrand Street, London WC1N 1HZ.
Tel: 071-833 4023
Requirements: BBC A3000 or Archimedes series

MEMORY Magic is a version of Kim's Game. This is hardly a novel idea, although it needs a computer with Archimedes-quality graphics to get a good implementation.

Also, with a micro you get a few extra features plus a high score table – and you do not have to scrabble around the house looking for bits and pieces.

After loading the program you are prompted for your name and can then select from a number of options. The idea of this old American Indian game is that you are shown a number of objects for a couple of minutes after which you go away and remember what you saw.

On level one you are offered four items, which can be displayed together or shown in sequence. You must then type a description of the pictures. To help you, a list of possible objects is included. This is essential since the program is totally inflexible about spelling which can lead to problems – since players who press the spacebar at the end of a word will be told that they got it wrong even if they didn't.

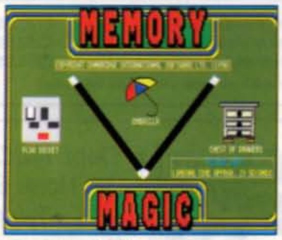
Only 100 per cent success will qualify players for level two, which involves memorising 10 objects, while level three displays 20 different pictures selected from the full range of 60 full colour sprites.

There are six levels, but I've not yet completed level three. The program's author says level two is his limit!

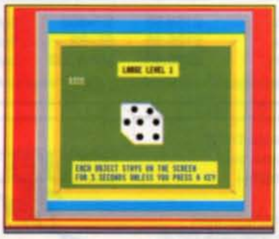
A score is given for each correct answer and if you remember enough your name will go on the high score table and be saved permanently on disc.

This is a simple game that will probably not amuse one person for too long. It could provide some party fun but it lacks that quality which gets people hooked.

Rog Frost



Remember this title screen



EACH OBJECT STAYS ON THE SCREEN FOR 5 SECONDS UNLESS YOU PRESS A KEY

Sound	N/A
Graphics	7
Playability	5
Value for money	5
Overall	5

SOFTWARE Bargains AND Mercury Games

Archimedes — Software Checklist — Archimedes

TITLE	SRP	SALE
1st Word Plus (V2)	91.94	79.95
8bit Sound Smp. + Midi	224.25	169.95
8bit Sound Smp Mono	155.25	124.95
Acheton	19.95	15.95
Alerion	14.95	11.95
Alien Invasion	14.95	11.95
All in Boxing	14.95	11.95
Alpha-Base	49.95	39.95
ALPS System	32.00	26.95
Amazing Ollie (Educ)	16.04	14.95
Ancestry	79.95	69.95
Ansi C (Release 3)	171.35	144.95
Apocalypse	29.95	29.95
ARC-COMM	33.35	29.95
ARC-PCB	195.00	175.95
ARC-PCB Professional	375.00	319.95
Arc Games Controller	40.24	33.95
Arcade 3 Compilation	14.95	11.95
Arcade Soccer	14.95	14.95
ArcDFS	29.95	26.95
Arcendium	14.95	11.95
Arch Operating System	21.95	-
Arch Assembly Lang	21.95	18.95
Arch Basic Compiler	99.95	89.95
Arch. First Steps	9.95	7.95
Arclight	50.00	39.95
Arctrivia	24.95	16.95
Armadeus	79.95	69.95
Armadeus Sound-Samp. Board	149.95	139.95
Artisan 2	59.95	49.95
Assembler	228.85	199.95
Atelier	99.95	89.95
Autosketch V2	90.85	79.95
Avon	19.95	17.95
Battletanks	14.95	11.95
Break 147	24.95	24.95
Brixx	17.95	14.95
Bug Hunter	17.95	15.95
Bumper Disc 1 (Educ)	19.95	15.95
Bumper Disc 2 (Educ)	19.95	15.95
Cambridge Pascal	79.95	69.95
Casino	24.95	19.95
Caverns	19.95	15.95
Chocks Away	24.95	24.95
CIS Utilities	11.95	9.95
Coffee (Educ)	32.14	29.95
Conqueror	24.95	19.95
Control Panel	17.20	11.95
COPS	19.95	15.95
Corruption	29.95	19.95

TITLE	SRP	SALE
DataVision	149.95	129.95
Delta Cat (Joystick)	29.95	26.95
Deltabase	29.95	24.95
Desktop Office	129.95	109.95
Desktop Publisher	171.35	139.95
Disc Tree V.2	49.95	41.95
Drop Ship	19.95	19.95
Dust Cover Archimedes	14.95	9.95
Dust Cover A.3000 K'bd	5.95	3.95
E-Type	19.95	19.95
Easiword	39.95	33.95
Euclid (RISC-OS)	70.00	59.95
Family Favourites	19.95	15.95
Flight Path (Educ)	32.14	29.95
Film Maker	99.95	84.95
Financial Accountant	275.00	234.95
Fireball 2	24.95	19.95
Fish	29.95	19.95
Flexifile	149.95	129.95
Flying Start II	99.95	64.95
Font Starter Pack	51.75	46.95
Fortran 77 (Release 2)	113.85	94.95
Freddy's Folly	14.95	11.95
Freddy Teddy	19.95	15.95
Fun School 2 (0-6yrs)	19.95	15.95
Fun School 2 (6-8yrs)	19.95	15.95
Fun School 2 (8+ yrs)	19.95	15.95
Fun School 3 (0-5yrs)	24.99	19.95
Fun School 3 (5-7yrs)	24.99	19.95
Fun School 3 (7+ yrs)	24.99	19.95
Fun School 3 due December 1990 – advanced priority order now being taken		
Gamma Plot	69.95	59.95
Genesis	99.99	84.95
Gerber Plot	125.00	104.95
Giant Killer	17.50	14.95
Graph Box V2	79.95	69.95
Graphic Writer	29.95	24.95
Guild of Thieves	29.95	19.95
H.P. Paint Jet Driver	14.99	11.95
Hearsay	69.00	59.95
Herewith The Clues	24.95	19.95
Holed Out	19.95	19.95
Hold Out Designer	19.95	19.95
Home Accounts	49.95	39.95
Hostages	19.95	15.95
Hotlink Presenter	57.49	49.95
Hoverbod	14.95	11.95
Ibix The Viking	19.95	15.95
Impression 2	194.35	164.95
Impression Junior	103.44	89.95

TITLE	SRP	SALE
Inertia	19.95	15.95
Instigator	49.95	41.95
Inter-chart (Disc)	21.85	18.95
Inter-sheet II (Disc)	33.35	29.95
Inter-word (Disc)	33.35	29.95
Interdictor 2	34.95	29.95
ISO Pascal (Release 2)	113.85	99.95
Jet Fighter	14.95	11.95
Knowledge Organiser	59.95	49.95
Last Days of Doom/Hezarin		15.95
Logistix.. (Inc manuals)	113.85	99.95
Logistix Manual Part 1	10.00	8.95
Logistix Manual Part 2	10.00	8.95
Mad Professor Mariarti	19.95	15.95
Maddingly Hall	14.95	11.95
Man of Arms	19.95	19.95
Manchester Utd	24.99	19.95
Master Break (Dec '90)	19.95	15.95
Maths Pack 1 (5-7yrs)	11.95	9.95
MicroDrive	19.95	15.95
Minotaur	14.95	10.50
Missile Control	14.95	11.95
Mogul	20.00	16.95
Mouse/Joystick Splitter	19.95	17.95
Multistore	299.00	249.95
Nevryon	19.95	19.95
Newhall Font Start. Pack	51.75	46.95
N-store	24.95	21.95
Ollie Octopus Sketchpad	16.04	14.95
Orion	14.95	11.95
Ovation	113.85	99.95
Overload	14.95	11.95
PC Access	39.95	33.95
PC Emulator	113.85	113.85
Pipedream 3	169.05	144.95
Pipemania	24.99	19.95
PIPP	39.95	33.95
PON	17.95	15.50
Presentation System	79.95	69.95
Presenter 2 (RISC-OS)	45.94	39.95
Pro Artisan	99.95	84.95
Prolog	228.85	194.95
Pysanki	19.95	19.95
Realtime Solids Modler	195.00	164.95
Redshift	17.95	14.95
Render Bender	79.95	69.95
Animated Discs	14.95	11.95
Repton 3	19.95	15.95
Rhapsody in Blue	49.95	39.95
Risc Basic Compiler	149.95	129.95
Risc Forth	149.95	129.95

TITLE	SRP	SALE
RISC-OS Prog Ref Manual		79.00
RISC-OS (Customer responsible for installation)	33.35	
RiscType	19.95	15.95
RoboLOGO	99.95	84.95
Rotor	24.99	19.95
Scan-Light Jnr A3000	228.85	199.95
Scan-Light Senior	458.85	434.95
Schema	129.95	109.95
Search & Rescue (Educ)		29.95
Sigma Sheet	69.95	59.95
Slappit	19.99	15.95
Software Dev. Toolbox	228.85	194.95
Solid CAD	149.95	129.95
SolidsRENDER	149.95	129.95
SolidTOOLS	375.00	319.95
Sound Synth	49.95	41.95
Spellbook (4-9yrs)	24.95	19.95
Spellmaster (Disc)	33.35	29.95
Splice	30.00	24.95
Sporting Triangles	24.99	19.95
Star LC10 Printer Driver	14.95	11.95
Star Trader	17.95	14.95
Super – Dump	24.95	19.95
Superior Golf	19.95	15.95
Supersound Creations 1	9.95	7.95
Supersound Creations 2	9.95	7.95
Symbol Font Pack	51.75	46.50
System Delta Plus	79.95	69.95
Talisman	14.95	11.95
Tempest	129.95	109.95
The Art Machine	29.95	24.95
The Olympics	19.95	19.95
The Pawn	29.95	19.95
The Real McCoy	29.95	29.95
Things...with Numbers	24.95	19.95
Things to do with Words	24.95	19.95
Thundermonk	14.95	11.95
Timewatch	29.95	24.95
Tiny Logo/Tiny Draw	29.95	24.95
Trivial Pursuit	29.99	24.95
Tween	30.00	24.95
Twin	33.35	29.95
U.I.M.	29.95	29.95
U-Connect	59.95	49.95
View 3.0	59.80	49.95
Word Up Word Down	17.95	14.95
Wordwise A-Plus	33.35	29.95
Zarch	19.95	15.95

Send SAE for our full Archimedes software catalogue

fun school 3

UNDER 5's Includes:-
- COUNTING - Help teddy reach the jar of honey by counting up to nine
- LETTERS - Join in all the fun at the alphabet fair by pairing large letters
- MATCHING - Pair up the shapes to fill teddy's piggy bank with money
- ACTIONS - Make teddy jump, hop, sleep, juggle, skip, eat & more
- PAINTING - Colouring fun down on the farm with all the pigs & cows
- GALLERY - Learning to read is really easy in the Fun School Gallery.

5-7 YRS Includes:-
- TOYSHOP - Spend your pocket money wisely in the shop
- TIME - Tell the time & watch the cuckoo clock come alive
- FUNTEXT - Explore the Ceefax-style database & take the challenge
- COLLECT - Guide the frog from log to log to create & solve the sums
- ELECTRICITY - Fix the incorrect circuits to set the bell ringing
- JOURNEY - Travel round the village & learn about directions.

OVER 7 YRS Includes:-
- TREASURE SEARCH - Follow compass directions to find the jewels
- WORD SEARCH - Pick out the words cleverly hidden in the large grid
- ROBOT DRAW - Create beautiful patterns & learn how to program
- PLANETARY MATHS - Solve the sums before they hit the forcefield
- SENTENCES - Correct spelling, punctuation & grammar mistakes
- DATABASE - Store information, sort it, search it, then test yourself.

Due for release in November – Prices per level
RSP BBC/ELE Cass £12.99 **Sale £9.95**
RSP BBC 5.25" Disc £16.99 **Sale £13.95**
RSP ARC Disc (Due December) £19.95 **Sale £15.95**
(Cheques cashed/credit cards debited only on day of despatch)

fun school 2

BBC/ELE CASSETTE RSP £9.95 **Offer Price £7.95**
BBC 5.25" DISC RSP £12.95 **Offer Price £9.95**
(All prices per age-range - 0-6 yrs, 6-8 yrs or 8+ years)

RECENT RELEASES

TITLE	BBC or Electron Cass	BBC disc	CPCT disc
A Question of Sport	8.95	10.50	14.95
Arcade Soccer	9.95	12.95	–
E-Type	9.95	14.95	–
Elite	8.95	10.95	15.95
Exile	9.95	10.95	15.95
Hostages	7.95	9.95	11.95
Holed Out	12.95	14.95	–
Klax (BBC only)	7.95	11.95	–
Last Ninja 2	7.95	9.95	11.95
Master Break (Dec '90)	7.95	9.95	11.95
Perplexity	7.95	9.95	11.95
Pipemania	7.95	11.95	11.95
Repton Infinity	8.95	10.50	15.95
Sim City	9.95	11.95	15.95
Sporting Triangles	7.95	9.95	–
Tank Attack	8.95	11.95	–
Ricochet	6.95	8.95	10.50
Play It Again Sam Compilations 1 to 10 (each):	6.95	8.95	10.50
Play It Again Sam Compilations 11 to 14 (each):	7.95	9.95	11.95
Superior Col 1 (BBC only)	6.95	8.95	10.50
Superior Col 2 (BBC only)	6.95	8.95	10.50
Superior Col 3 (Ele only)	6.95	–	–

Send SAE for full BBC, Electron or Compact catalogue

JOYSTICKS

Joysticks for BBC, B+/Master 128 & Electron Plus 1

Competition Pro
£19.95
Arcade quality micro switches, 8 directional control, 2 fire buttons on base.

Superpro Auto
£13.95
Arcade quality micro switches, 8 Directional control, triple action auto-fire and suction pads.

Delta 3B Twins
£19.95
2 analogue, light spring action, joysticks wired to one plug

Delta 3B Single
£13.95
Analogue, light spring action joystick. Can be used as either left or right-handed.

Printers ... Printers ... Printers ... Printers

KX-P1081	Panasonic 9 pin 80 col dot matrix	**£159.95**	**SP-200**	Seikosha 9 pin dot matrix	**£179.95**
KX-P1180	Panasonic 9 pin 80 col dot matrix	**£169.95**	**SL-92**	Seikosha 24 pin dot matrix	**£269.95**
KX-P1124	Panasonic 24 pin 80 col dot matrix	**£259.95**	**MP-1350**	Seikosha 9 pin dot matrix	**£314.95**

(Prices include VAT, printer cable & courier despatch - (UK mainland only). Please state for which computer you require the printer)

- ● Please add 95p P&P (Europe £2.50, Outside Europe £4.50)
- ● All prices include VAT (except books which are zero rated)
- ● Goods despatched within 48hrs (subject to availability)
- ● Out of hours answerphone . . 0532 436300
- ● Educational discount of 30% off RSP available on Archimedes software, Official Order No. required – minimum order value £30.00

SOFTWARE Bargains

Dept. MUC0, C/o Northwood House,
North Street, Leeds LS7 2AA
Telephone **0532 436300**
Please make cheques payable to SOFTWARE BARGAINS

The CJE ARM 3 Upgrade + SUPER BOOSTER

The CJE ARM 3 runs at 30 MHz, but with our optional ARM 3 Super Booster it will allow you to run your CJE ARM 3 at higher speeds.
For example 33, 34, 35, 36+ Mhz may be possible.
(This upgrade is only suitable for the Archimedes 300/400 series fitted with MEMC1A)

CJE ARM 3 Upgrade	£434.78 ex VAT	£500.00 inc VAT
ARM3 SUPER BOOSTER	£30.00 ex VAT	£34.50 inc VAT

(Please state clock speed ie 33, 34, 35, 36 . . . Mhz)

FOR FURTHER DETAILS PLEASE RING US.

NEW LOWER MEMORY PRICES

Archimedes **310** 2nd MB	£295.65 ex VAT	£340.00 inc VAT
Archimedes **310** 4MB	£452.17 ex VAT	£520.00 inc VAT

Archimedes 310 Memory expansion prices include the fitting of the upgrade, courier collection and return of your computer.

BBC A3000 2nd MB	£90.00 ex VAT	£103.85 inc VAT

NEW BBC A3000 4MB EXPANSION

The BBC A3000 can now be expanded to 4MB without running the risk of damaging your power supply. This expansion board uses 8 x 4MBit chips which draw the same power as our 2MB expansion

BBC A3000 4MB	£247.83 ex VAT	£285.00 inc VAT

CJEmicro's

C.J.E. MICROS (DEPT. MU) 78 BRIGHTON ROAD,
WORTHING, WEST SUSSEX BN11 2EN.
TELEPHONE 0903 213361
(3 lines)

Watford Electronics

Jessa House, 250 Lower High Street, Watford WD1 2AN, England
Tel: Watford (0923) 37774 Tlx: 8956095 Fax: (0923) 33642
Shop Hours: 9am to 6pm (Mon.-Sat.) Thursday 9am to 8pm. FREE customer car park.
All prices exclusive of VAT; subject to change without notice & available on request.
Credit Card Orders (ACCESS & VISA) Tel (0923) 33383 or 50234 (24 Hours)

Acorn

The choice of Experience

The choice before and after the experience

Archimedes micro

System	Basic	Mono	Colour	Multiscan
410/1	£1099	£1159	£1288	£1448
420/1	£1299	£1359	£1488	£1648
440/1	£1699	£1759	£1888	£2048
540/1	£2995	£3065	£3184	–

12 MONTHS FREE MAINTENANCE ON SITE

Archimedes A3000

● A3000 Microcomputer	**£599**
● A3000 + Learning Curve pack	**£699**
● 3.5" External Drive	**£99**
● Monitor Stand	**£16**
● External Podule Case	**£13**
● Serial Upgrade	**£17**
● A3000 Technical Manual	**£29**
● Dust Cover Micro only	**£5**
● Dust Cover for Micro + Monitor	**£9**
● User port/MIDI upgrade	**£45**

Unbeatable Sale Offers on Archimedes Micro

(Extended by Popular Demand)

When you purchase an Archimedes Micro from Watford, look what you get FREE with it

Micro	Free Offer
A410/1	Upgraded to 2MB RAM & a 20MB Hard Disc, (A420)
A420/1	Upgraded to 4MB RAM 40MB Hard Disc (A440), MK II Learning Curve pack and Acorn DTP pack
A440/1	Upgraded to 4MB RAM 40MB Hard Disc (A440), MK II Learning Curve pack and Acorn DTP pack
540/1	High Res Multiscan Monitor & Panasonic KX-P1180 Printer
A3000	Upgraded to 2MB RAM on board

+ 12 months FREE On-Site Maintenance

ACCESSORIES

● NEW Multitasking RISC OS	£29
● ROM Podule (Computer Concepts)	£45
● 3.5" 800K 2nd Floppy Drive (305/310)	£118
● 5.25" 800K external Floppy Drive	£85
● I/O Podule (with Analogue port, User port, & 1MHz bus)	£78
● MIDI add-on to I/O Podule	£29
● MIDI Expansion Card	£65
● Sound Sampler Mono (Armadillo)	£129
● Sound Sampler Stereo (Armadillo)	£166
● Sound Sampler Stereo /Midi (Armadillo)	£186
● Chromalock Podule (Wild Vision)	£275
● Econet Network Board	£46
● Archimedes IEEE Interface Adaptor	£269
● Dual RS232 Podule	£195
● 16 bit parallel I/O Card	£195
● NEW – Archi MK II Replacement Mouse	£39
● PC Emulator NEW Faster Version	£62
● Software Developers Toolbox	£149
● Floating Point Unit	£455
● SCSI Adaptor Expansion Card	£169
● Keyboard Extension Lead	£6
● 2 Podule Backplane	£25
● 4 Podule Backplane	£38
● Fan for above backplanes	£8
● Archi Real-time digitiser	£199

8Meg RAM Upgrade for Archimedes A400 Micros

● **R810** – A410/1 upgraded to 8MB	£910
● **R820** – A420/1 upgraded to 8MB	£859
● **R840** – A440/1 upgraded to 8MB	£749
● **R814** – R140 upgraded to 8MB	£749

Turbo Charge Your Archimedes

Increase the speed of your Archimedes by a factor of THREE to SIX times (depending on the software you are running), with Watford's ARM3 Upgrades.

● **ARM-3** 20MHz Upgrade Board	£349
● **ARM-3** 30MHz Upgrade Board	£399
● **MEMC** 1A Upgrade	£49

(Special Offer – If purchased together with an Archimedes Micro, then not only will we fit the card Free of Charge but we will also reduce the price by £60 i.e. You pay only £289 for ARM3 20MHZ & £339 for ARM3-30MHz)

Convert your Archi 410 to a 420 or 440 with Watford's unique Upgrade Kits

UP10 – to 2MB RAM + 20MB Hard Disc	£229
UP15 – to 2MB RAM + 40MB Hard Disc	£334
UP20 – to 4MB RAM + 20MB Hard Disc	£335
UP30 – to 4MB RAM + 40MB Hard Disc	£445
UP40 – to 4MB RAM + 53MB Hard Disc	£515

Archimedes RAM Upgrade

All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

● **R302**-A3000 – to 2MB RAM Upgrade	£65
● **R304**-A3000 – to 4MB RAM Upgrade	£179
● **R311**-A305 – to 1MB RAM Upgrade	£99
● **R312**-A305/310 – to 2MB RAM Upgrade	£245
● **R314**-A305/310 – to 4MB RAM Upgrade	£435
● **R412**-A410/1 – to 2MB RAM Upgrade	£65
● **R413**-A420/1 – to 4MB RAM Upgrade	£120
● **R414**-A410/1 – to 4MB RAM Upgrade	£173

Archimedes Hard Disc

Watford's Hard disc drives for A310 & A410 series fit internally into the space provided. The 'simple to follow' fitting instructions supplied makes drive fitting very easy. All disc drives are self parking. 40Meg & 53Meg drives are fast 24mS type, while 20MHz are 28mS.
P.S. A310 upgrades require a backplane and a fan.

● **3HDP** – Hard Disc Podule only	£135
● **3HD20** – 20Meg H' Disc + Podule for 310	£299
● **3HD40** – 40Meg H' Disc + Podule for 310	£399
● **3HD50** – 53Meg H' Disc + Podule for 310	£474
● **4HD20** – 20Meg Hard Disc for 410	£169
● **4HD40** – 40Meg Hard Disc for 410	£269
● **4HD50** – 53Meg Hard Disc for 410	£399
● A3000 20Meg Hard Disc + Podule	£359
● A3000 40Meg Hard Disc + Podule	£489

Silicon Vision Corner

Gerber Plot	£93
Risc Basic	£74
Solid CAD	£74
Super Plot	£20
Super Dump	£20
ROBO LOGO	£54
Solids Render	£54
Solid Tools	£199
Arc PCB Professional	£275
Realtime Solids Modeller	£110

● RB2 – Archi Marconi Trackerball	£46
● Risc Os Extras Software Disc	£5
● Smoked Perspex Low profile Keyboard Cover	£8
● Ethernet Card	£220
● Laser Direct	£849

Desk Top Publisher

Acorn's Archi DTP Package	**£125**
Impression DTP Package	**£135**
Impression 2 DTP Pack	**£165**
Impression Junior	**£79**
Tempest DTP Package	**£99**

Archi Wordprocessors

Wordwise + Disc	£24
Image Writer	£25
Interword Disc	£24
1st Word Plus – 3	£69
Archie Spell Master	£39
P.Spellchecker	£40
View	£45
Viewindex	£12
Graphic Writer	£23
EASIWORD	£30

Databases

AlphaBase	£36
Knowledge Organiser	£45
Multistore	£195

Spreadsheets

Intersheet Disc	£24
Sigmasheet	£55
Viewsheet	£45

Business Graphics

GammaPlot	£39
Interchart Disc	£20
Sigmaplot	£39

Integrated Packages

● Logistix	£85
● Pipedream 3	£120
● Desktop Office – Database, Graphs & Charts, Wordprocessor, Spreadsheet, Communications	£105

Graphics, Art, Design & Games

GRAPHICS

Atelier	£65
Artisan II	£54
Pro Artisan	£72
Autosketch II	£68
Graph Box	£64
Kermit	£46
Render Bender 2	£58
Euclid 2	£52
Mogul	£19

GAMES

Alerion	£11
Arcade 3	£11
Apocalypse	£23
Arcade Soccer	£15
Battle -Tank	£14
Break 147	£20
Bug Hunter	£14
Chocks Away	£20
Clares 3 Pack	£12
Class Mate	£35
Conqueror	£19
Drop Ship	£17
Enthar Seven	£22
E-Type	£15
E-Type Designer	£15
E-Type Extra 100 miles	£18
Freddy's Folly	£10
Freedom Fighter	£21
Holed Out Designer	£15
Holed Out Golf	£15
Hostages	£17
Hoverbod	£11
Ibix the Viking	£14
Inertia	£17
Inter Dictor 2	£27
Jet Fighter	£10
Knowledge Organiser	£49
Man at Arms	£15
Minotaur	£11
Missile Control	£11
Nevryon	£17
Olympics	£15
Orion	£12
Pacmania	£14
Quazar	£10
Real McCoy	£25
Redshift	£15
Repton 3	£17
Sporting Triangles	£24
Superior Golf	£17
Talisman	£14
The Pawn	£19
Thundermonk	£11
White Magic	£15
Zarch	£13

Miscellaneous

Armadeus Sound	£69
Arccomm Pack	£24
BBC DFS Reader	£15
Genesis	£65
Hearsay Comms Pack	£50
Laser Direct	£875
Rhapsody in Blue	£42
Toolkit (Clares)	£42

LANGUAGES (Archimedes)

ISO-PASCAL; FORTRAN 77			£77 each
ANSI C Release 3			£125
Assembler; LISP or Prolog X			£149 each
LOGOTRON LOGO			£55
ROBO LOGO	£49	TWIN EDITOR	£25
RISC BASIC	£85	BASIC Compiler	£77

MINERVA's Archimedes Software

Sigmasheet	£55	Sales Ledger*	£53
Home Accounts*	£36	Purchase Ledger*	£53
Stock Manager*	£53		
Nominal Ledger*	£53	Reporter	£29
Ancestry	£59	Mailshot*	£29
System Delta+	£55	MultiStore	£195
System Delta + Reference Manual			£25
Order Processing/Invoicing*			£53
School Administrator			£118

* *Requires System Delta*

NEW Business Accounts Packages
Nominal Ledger, Order Processing/Invoicing, Purchase Ledger, Sales Ledger & Stock Control
Price: **£85** per Module or
£325 for complete package

ULTIMUM – Archimedes A3000 Podule Racking System

THE ONLY LOGICAL WAY TO EXPAND YOUR A3000 COMPUTER

The accepted standard for Archimedes computer expansion is the Acorn Podule, designed initially to fit the old 310, and also for the later A400 and A400/1 series micros. The podules fit inside these computers up to four at a time. The A3000 is the little brother of the family, but can only have one podule at a time, plugging into the back of the computer.

Other attempts have been made to expand the A3000 by trying to introduce a 'mini-podule'. This is impractical for many reasons, amongst which is the reluctance of manufacturers to produce them. Nobody wants to re-design podules already produced. Some cannot be produced on a 'mini-podule' as they are far too complicated and simply wouldn't fit.

Watford Electronics listens to the demands and requirements of its customers, and we are glad to say that we have come up with the only real solution to the A3000 expansion problem. The ULTIMUM Podule Racking System allows up to three FULL SIZE standard Archimedes 300/400 series podules to be fitted to the computer. In addition, there is also provision for a hard disc drive and a podule to be fitted internally.

Since the ULTIMUM Podule Racking System takes proper full size podules, you will be able to use any of the currently available peripheral equipment, from companies like Computer Concepts, Armadillo, Acorn and of course, our own brand.

Fitting the podules to 'ULTIMUM' is simple. They are neatly fitted inside the metal case of the rack, avoiding the previously untidy method of hanging the podule off the back of the computer, risking damage to both, it and to the computer.

'ULTIMUM' has its own power supply, so no strain is put on the A3000 power supply. There is also an IEC mains output socket for an Acorn type monitor so reducing the number of plugs required to go to the mains. The ULTIMUM is rigidly clamped over the top and under the computer, and allows direct access to the floppy disc drive and reset button, rather than obstructing access as on other systems. One can also place a standard monochrome or 14" colour monitor (even a multiscan type) safely on top. The mounting method employed is so firm that the computer could even be safely transported without the assembly falling apart.

By popular demand, we are now able to supply refurbished and fully guaranteed, Acorn range of Micros.
(Please telephone for price & availability)

Archimedes to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.
New RISC OS Version **Only £15**

Archimedes 5.25"/3.5" Disc drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. NO SOLDERING is involved. Supplied complete with necessary lead. **Only £21**

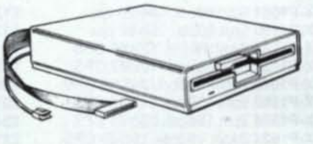
Special Education Prices

All education establishments qualify for special education prices on micros, etc. Please write in or telephone (0923) 37774 or 50335 for written quotation.

BBC MASTER

MASTER 128K Micro incl. Acorn's View, Viewsheet, ADFS, BASIC Editor & TERMINAL plus FREE OFFER (see below) **£399** *(carr £7)*

FREE OFFER



A 5.25" Double Sided, 40/80 track switchable 400K Disc Drive complete with cables and a Utilities disc incl. 2 games, plus

Gemini's OFFICE MATE & OFFICE MASTER packages on Disc consisting of: Database, Spreadsheet, Beebplot graphics. Accounts packs: Cashbook, Final Accounts, Mailist, Easyledger, Invoice & Statements, Stock Control.

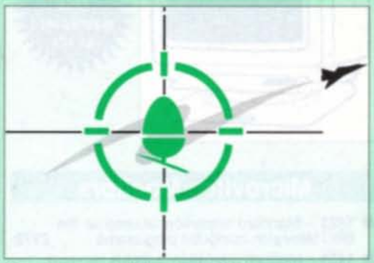
FREE with every BBC Master purchased from us during November

ADD-ONs & ACCESSORIES

Turbo 65C102 Add-on Module			£115
Econet Module for the Master			£47
Twin ROM Cartridge for Master			£9
Quad ROM Cartridge for Master			£14
Master Reference Manual I		(No VAT)	£14
Master Reference Manual II		(No VAT)	£14
Master Advance Ref Manual		(No VAT)	£17
64K Upgrade Kit for B+			£32
Acorn 1772 DFS Kit complete			£49
ECONET Upgrade Kit for BBC B			£42
ALL ECONET UPGRADES Available			
ARIES' IEEE Interface for BBC B & Master			£238
Morley Teletext Adaptor with ATS Rom			£99
Filestore E01S	£899	Filestore E40s	£749
Filestore E60S	£949	Ecolink	£270

(Carr. £2 to £7 depending on the weight)

Take the Acorn Archimedes Test Flight and win yourself a Supersonic Concorde Flight



Take the new Archimedes 420/1 Learning system home by booking a slot in Watford's Acorn approved Test Schedule. Call in at our showroom and check it out for yourself – Leave a deposit and you may borrow one of our specially chosen Learning Curve System for up to 14 days. Be satisfied before you buy. Return the system in good order for a complete refund. At the same time you may enter our FREE aviator competition. You could win stunning prizes; Fly in First Class Luxury in Concorde; Learn to fly a helicopter' Take a weekend of flying lessons; and many more prizes. So why not take a test fly at Watford.

For Archimedes Mk II Hand Scanner, Real Time Digitiser, Graphics Tablet, Software & Books, see pages 5, 8, 10 & 12 of our advert.

Z88 Portable Micro

Only: **£195** (Carr £4)

FREE

With every Z88 purchased from us, we are giving away absolutely FREE, a Z88 to BBC Interface Link, 4 rechargeable batteries and a compact Mains Battery Charger worth £38.

Z88 ACCESSORIES

● 32K RAM Pack or 32K EPROM Pack			£18.00
● 128K RAM Pack or 128K EPROM Pack			£45
● 512K RAM Pack			£175
● Z88 Eprom Eraser Unit			£35
● Z88 Spellmaster for Pipedream			£51
● Z88 Carrying Case			£9
● Z88 Computing Book			£9.95
● AA Nicad Rechargeable Battery			£1.50
● Battery Charger Compact & Fast			£6
● Z88 Serial Printer Cable			£9
● Z88 Parallel Printer Cable			£25
● Z88 to Archi Link			£15
● Z88 to BBC Link	£20	● Z BASE	£56
● Z88 to PC Link II	£30	● Z TAPE	£42
● Z88 to Macintosh	£52	● Z TERM	£42
● Z88 Mains Adaptor	£9	● Z88 Modem	£149

CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383

Continued→ → → → → → → → →

12 months FREE maintenance on site

Microvitec Monitors

● **1431** – Standard resolution as used on the BBC television computer programme	£172
● **1451** – Medium resolution, suitable for word processing in mode 0	£215
● **Cub3000** Medium Res for A3000	£195
● **1455** – MS Medium resolution, ideal for Archimedes	£220
● **1441** – High res, exceeds the capabilities of the BBC Micro	£359
● **1451AP** RGB + PAL and AUDIO	£255
● **2040 CS** 20" Hi Res	£675
● Dust Cover for Microvitecs	£5.50
● **Touchtec 501 Touch Screen**	£239

Multiscan Colour

● **TAXAN** 775 Plus – 0.28 Dot pitch Ultra high resolution, anti-static screen	£429
● **TAXAN** 795 TRINITRON 0.26 Dot pitch 1024 x 768 Non interlaced	£499
● **TAXAN** 770LR Low Radiation Multiscan	£425
● **PANASONIC** – 14" Super High Res. 0.29" Dot pitch, non glare screen. Built-in Swivel base	**Launch price** £349
● **EIZO** 9060SZ Low Radiation, Super High Resolution, Antistatic screen, multiscan monitor for a wide range of applications. 800 dots x 600 lines. Display for high res VGA. 0.28 Dot pitch	£409
● **EIZO** 9070S 16" Low Radiation .28 Dot pitch. As used on Archi 540/1	£625

Philips

● **BM7502** 12" Hi-res Green Monitor	£70
● **CM8833** 14" Med. Res Colour Monitor	£199

STAR BUY

- **PHILIPS 14"** Medium Res, dark glass, attractively finished Colour Monitor . A push-button switch toggles between Hi-Res monochrome green text mode and full colour display. (Please state the type of Connecting Lead you require).

ONLY £179

Dust Cover for Philips Monitors	£6

(Securicor carriage on Monitors £7)

Swivel Bases

By simply placing your monitor on one of our front adjustable professional swivel bases (see drawing at the top), you can easily adjust the viewing angle.

for 12" Monitors **£8** (carr. £2.50)
for 14" Monitors **£12** (carr. £2.50)

Anti Glare VDU Screen

These extremely effective, easy to install, 12" & 14" VDU screens eliminate harmful glare, improves contrast on colour monitors. Increases productivity in offices. A must for wordprocessor users.

£12

Spare Monitor Leads

BNC Lead for Zenith or Philips	£3
Skart Monitor Lead	£5
RGB lead for TAXAN Monitors	£3
Archimedes Colour Monitor Lead	£7.50

FREE On-Site Maintenance

This month we are also offering at no extra cost to all our customers, 12 months, On-Site Maintenance on all Microvitec and Multiscan colour monitors; all Panasonic, Hewlett Packard, and all Laser Printers, Roland Plotters and of course the full range of Archimedes micros. Should the machine fail, simply telephone the maintenance engineer, who will call in within 12 working hours. (Offer applicable only when bought at prices advertised in this advert. UK mainland only).

Concept Keyboards

Standard A3 Keyboard with BBC Software	£143
Standard A4 Keyboard with BBC Software	£117
Archi A3 Keyboard	£144
Archi A4 Keyboard	£118

Roland Plotters

(Official Roland Appointed Distributor)

● **DPX 2500**	£2389	● **DXY 1100**	£545
● **DXY 1200**	£715	● **DXY 1300**	£899

Panasonic Printers

12 MONTHS FREE MAINTENANCE ON SITE

FREE with every **KX-P1081 & KX-P1180** Printers: A printer lead (please specify type required) and a Dump Out 3 ROM for the BBC Micro or 1,000 sheets of fanfold paper for other micros, please specify)

● **KX-P1081** 9pin 80col. 144/28 cps	£124
● **KX-P1180** 9pin 80col. 192/38 cps	£134
● **KX-P1123** 24pin 80col. 192/63 CPS	£179
● **KX-P1124** 24pin 80col. 192/63 CPS	£185
● **KX-P1540** 24pin 136col. 240/80 CPS	£390
● **KX-P1592** 9pin 136col. 216/45 CPS	£275
● **KX-P1595** 9pin 136col. 288/61 CPS	£345
● **KX-P1624** 24pin 132col. 192/63 CPS	£318
● **KX-P1695** 9pin 132col. 330/86 CPS	£320

Panasonic Accessories

Cut Sheet Feeders

KX-P1592/1595 (P32)	£175	KX-P1540 (P35)	£175
KX-P1124 (P36)	£85	KX-P1180 (P37)	£79

Buffers

P12	4K buffer Board for 1081	£55
P42	32K buffer Chip for 1592/1595	£16
P43	32K Buffer Chip for 1540/1124/1180	£16

Serial Interfaces

P17 P1081/1592	£32		**P19** P1124/1180	£55

Integrex Colour Jet

● Colour Jet 132 Printer	£515
● Paper Roll	£6.50
● Screen Dump Software	£10
● Colour Cartridge	£19.50
● Colour Textile Cartridge	£29
● Black Cartridge	£11.25
● Black Textile Cartridge	£17
● 100 A4 OHP transparencies	£55
● 8K Serial Interface Optional	£123

Citizen Printer

120D Plus	£105	Swift 9	£198
Prodot 9	£275	Prodot 24	£275
Swift 24	£238		
Swift 24 Colour Option			£34
Swift 24 Ribbons	Black **£4**		Colour **£13**

Canon Printer

Canon Bubblejet BJ 130E	£435
Canon Bubblejet 10E	£269

Hewlett-Packard Printers

● Desk Jet 500	£379	● Quiet Jet Plus	£415
● Desk Writer	£620	● Scan Jet Plus	£1199
● Desk Jet Cartridge	£15	● HP Think Jet	£250
● Paint Jet Colour	£676		

Star Printers

● **LC10** 9pin 80col. 144/36 CPS	£119
● **LC10** Colour 9pin 80col. 144/36 CPS	£158
● **LC10-II** 9pin 80col. 180/45 CPS	£145
● **LC15** 9pin 136col. 180/45 CPS	£250
● **LC24-10** 24pin 80col. 180/60 CPS	£185
● **LC24-15** 24pin 136col. 200/67 CPS	£315
● **XB24-10** 24pin 80col. 240/80 CPS	£379
● **XB24-15** 24pin 80col. 240/80 CPS	£489
● **XB-24** Colour Kit	£35
● **LC-200** Colour 9pin 80col. 180/45 CPS	£185
● **LC-24-200** 24pin 80col. 222/67 CPS	£229
● **LC24-200** Colour 24pin 80col. 222/67 CPS	£265

Star Accessories

Cut Sheet Feeder

LC10/LC24-10	£65	LC15/LC24-15	£125
XB24-10	£80	XB24-15	£139
LC24-200	£63		

Serial Interfaces

SPC-10	LC10; LC10-II; LC10-Col; LC15; LC24-10; LC24-15; LC-200; LC24-200	£49
8K Ser	LC-200; LC24-200; FR10; FR15; XB24-10; XB24-15	£64

Paper Roll Holders

LC-200; LC24-200; LC24-200 colour	£29

Buffers

32K Ram Card for LC24-10; 15 & 200	£55
32K Ram Card for XB24-10 & 15	£55

Ribbons

LC10; LC10-II; LC15	Black **£4;**	Colour **£6**
LC-200; LC24-200	Black **£5;**	Colour **£12**
XB24-10; XB24-15	Black **£5;**	Colour **£12**

Laser Printers

● Canon LBP-4	4ppm	£735
● Canon LBP-8 III	8ppm	£1279
● Epson EPL7100	6ppm	£779
● HP Laserjet IIP**	4ppm	£725
● HP Laserjet III	8ppm	£1199
● HP Laserjet IIID	8ppm	£1875
● Panasonic KX-P4420	8ppm	£785
● Panasonic KX-P4450i	11ppm	£1105
● Panasonic KX-4455 Postscript	11ppm	£1799
● Qume Crystal Print WP+		£749
● Qume Crystal Print Ser. 2		£1065
● Qume Crystal Print Publisher 2		£1899
● Star LP-8 II		£1099
● Star LP-8 Star(post)script		£1575

** Lower Paper Cassette Tray & Premier Collection Software, **FREE** with every HP Laserjet IIP printer purchased from us. Offer subject to availability.

Laser Toners

Canon 2 & 4	£60	Laserjet II & IIP	£60
Epson GQ	£18	Laserjet III	£75
Star LP-8	£59	Qume Crystal	£63
KX-P4420/50	£25		

Laser RAM Upgrades

HP Laserjet II RAM		GQ5000 512k	£99
Jetware II 1MB	£175	KX-P4420	1M £249
Jetware II 2MB	£330	KX-P4450i	1M £299
Jetware IIP 1MB	£199	KX-P4450i	2M £575
Jetware IIP 2MB	£319		

Laser Drum & Developer

● Epson Drum	£129
● Panasonic 4450 Drum	£119
● Panasonic Developer	£90
● Qume Drum	£76

Epson Printers

EX800	**£410**	LQ1050	**£540**
EX1000	**£540**	LQ1060	**£619**
FX850	**£295**	LQ2550+	**£729**
FX1050	**£370**	LX400	**£120**
FX1060	**£599**	LX850	**£179**
LQ400	**£179**	SQ850	**£515**
LQ550	**£246**	SQ2550	**£779**
LQ850	**£439**	TLQ4800	**£1449**
LQ860 Colour	**£499**		

Cut Sheet Feeders for

EX800/FX800/850/LQ800/850	**£130**
FX1000/LQ1000/1050	**£175**
LQ2550	**£390**
LX400/800/850/LQ400/500/550	**£69**

Tractor Feed for

LQ800 **£44;** LQ850/FX850 **£69;** LQ1050/FX1050 **£85;** LQ2500 **£90;** LQ2550 **£90.**

Accessories

● EX800/1000 Colour Option	**£45**
● EX800/1000 Colour Ribbon	**£14**
● LQ2500 Colour Option	**£65**
● Multifont Card for LQ550/850/1050	**£95**

Epson Printer Interfaces

All these interfaces fit inside the printer

RS232	**£32**	RS232 + 2K Buffer	**£52**
IEEE 488	**£40**	RS232 + 8K Buffer	**£79**

Printer Leads

BBC Centronics 4' long	**£5**
BBC Centronics 6' extra long	**£7**
Compact's Special Centronics Lead	**£7**
Archimedes Printer Lead 6'	**£6**
Nimbus Centronics Lead	**£6**
IBM/Archimedes Parallel Lead 6'	**£6**
IBM/Archimedes Parallel Lead 5 metres	**£13**
IBM/Archimedes Parallel Lead 10 metres	**£19**
Double Ended 36 way Centronics Lead 4'	**£7**
Double Ended 36 way Centronics Lead 6'	**£9**
MSX Centronics Parallel Lead 4'	**£12**
RS232 Leads (Various)	**P.O.A.**
IBM Keyboard extension lead coiled	**£5**

Important Notice to All our Customers

Watford Electronics only supplies printers fitted with British Specification 240V AC Mains 3 core cable with connections for Live, Neutral and Earth. We do not sell, nor intend to supply grey imports from Europe or Hong Kong with incorrect 220V European mains connections (2 core cable!) which could be dangerous to the end user.

Megabuffer 256

The Smallest 256K Printer Buffer Unit in the world **38mm x 130mm x 134mm.**

This new Megabuffer 256 from Watford is a full featured 256K Printer Buffer. The features are:

- Improves efficiency by making more efficient use of computer and printer.
- Compatible with any computer and printer that uses Centronics Parallel connections including all BBCs, IBM PCs, etc.
- Total compatiblity with all software.
- Cheaper phone bills when using your Modems.
- Ideal for those doing large graphics screen dumps that are slow to print.
- Multi-Copy facility allows you to print several copies via Megabuffer without going through your computer.
- Data Dump facility is included.
- Built in text unit for both the buffer & your printer.

Only £119 (carr £5)

Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 Printers to 1 Micro with our combined, Sharer/Changer. These Units are made to a very high standard. For extreme reliability, they all have Printed Circuit Boards mounted inside the case, (not a Spaghetti Junction of wires). Internal connection is made via high quality ribbon cables.

(Ideal for School environments)

Connects	Serial	Centronics	P&P
2 to 1	£16	£17	£3
3 to 1	£22	£24	£3
5 to 1	£36	£32	£4

(Cables extra at £6 each. Please specify type required when ordering)

2 Way Compact Printer Switch

A handy 2 way compact printer switch. Enables one micro to be connected to 2 printers or vice versa.

Centronics **£18;** Serial **£17**

(Cables extra at £6 each)

Auto Printer Sharer Switch

Connects	Serial	Centronics
2 to 1	£36	£39
4 to 1	£59	£55
8 to 1	–	£85

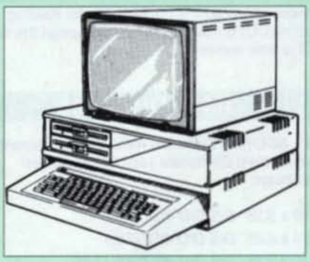
256K Multi Spooler
(Auto Printer Sharers – Centronics)

● 2 In/1 out	**£135**	● 4 In/2 out	**£169**
● 8 In/1 out	**£199**		

Compact Converter Units

Serial to Parallel	**£36**	Parallel to Serial	**£37**

Plinths for BBC Micro, Master & Printer



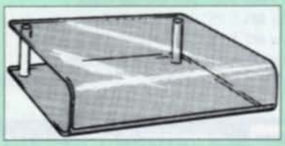
Protect your computer from the heat of your VDU. Our micro plinths have slots for maximum ventilation. The single plinth is suitable for a BBC and VDU, whilst the double height version provides enough room for our stacked disc drive and other peripherals like, Eprom programmer, music unit or simply discs & stationary. The computer slides neatly in the lower section allowing easy access to remove the lid.

The single printer stand is equally sturdy but instead of cooling slots it has elegant cutouts on the sides. This allows easy access to paper from all sides. Colour: BBC Beige.

Single BBC Plinth	420 x 310 x 105mm	**£13**
Double BBC Plinth	420 x 310 x 210mm	**£24**
Printer Plinth	420 x 310 x 105mm	**£12**
Single Master Plinth	490 x 310 x 105mm	**£14**
Double Master Plinth	490 x 310 x 210mm	**£26**

(Carr. Single plinth £2; double plinth £3)

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version	**£16** (carr £3)
136 Column version	**£20** (carr £4)

Listing Paper (Perforated)

● 1,000 Sheets 9.5" x 11" Fanfold Paper	**£7**
● 2,000 Sheets 9.5" x 11" Fanfold Paper	**£11**
● 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold	**£21**
● 1,000 Sheets 15" x 11" Fanfold Paper	**£9**
● 1,000 Sheets true A4 Fanfold Paper 70gms	**£11**
● 2,000 Sheets true A4 Fanfold Paper 70gms	**£21**
● Teleprinter Roll (Econo paper)	**£4**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Carriage 1K Sheets £2.50, 2K Sheets £3.00

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	**£6.00**
1,000 90 x 36mm (Twin Row)	**£6.25**
1,000 90 x 49mm (Twin Row)	**£7.50**
1,000 102 x 36mm (Twin Row)	**£6.75**

Carriage on 1,000 Labels £1.00

CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
Brother HR15/20	£6.00	–
BBC Micro	–	£3.50
BBC Master	–	£4.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£2.75	£4.50
DMP2000	£2.75	£4.75
EX800/1000	£3.50	£5.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£3.25	£5.00
LQ400/500/550/800/850	£3.25	£6.00
LQ1050/LQ2500	£4.00	–
LX80/86/800/850	£2.75	£4.50
LX400	£3.50	£5.00
M1009/GLP	£2.95	£3.75
NEC P2200	£4.50	£5.00
Panasonic KX1080/81	£3.25	£4.75
Panasonic KX-P1124	£7.50	£5.00
SQ2500	£23.00	£5.50
Star LC10/NL10	£2.75	£5.00
Star LC24-10	£2.95	£6.00
Olivetti Ink Jet Cartridges (set of 4)	£9	

Our attractive Dust Covers are manufactured from translucent PCV. The seams are stitched and edges are taped to prevent splitting due to continuous use.

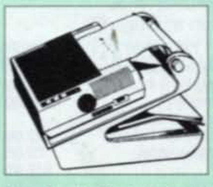
Original Panasonic Ribbons

Guaranteed to last 3 million characters

P110	for KX-P1081, 1592 & 1595	**£8**
P115	for KX-P1180	**£8**
P145	for KX-P1124	**£8**
P140	for KX-P1540	**£10**

Colour Ribbons for KX-P1081, 1592 & 1595
Brown, Blue or Red **£9.95 each**

Professional Printer Stand

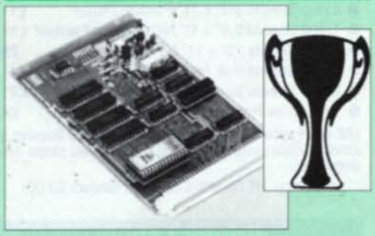


The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergon-omic design ensures smooth paper flow and automatic refolding.

80 Column version £23 (carr. £3)
132 Column version £28 (carr. £4)

Continued→ → → → → → → → →

Archimedes Real-Time Digitiser



Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £175

A Set of Colour Filters for colour image grabbing using a video camera	£16
New Risc-OS Software Upgrade	£39

Archi Graphic Tablet

The Archi Graphic Tablet offers performance and accuracy comparable to other tablets priced at well over £400, and has the useful addition of a liftable cover, which can hold tracing material or menu templates securely. The package is supplied complete with sophisticated Archi software. (Now, fully LinCAD compatible. Recommended by Linear Graphic).

(FREE this month, PC Mouse Drivers & Art package)

(Now, fully LinCAD compatible. Recommended by Linear Graphic).

(FREE this month, PC Mouse Drivers & Art package)

Special Price £225

(Price includes Tablet, Leads, Software & Puck)
Stylus Optional Extra **£29**

Disc Plonker Rack

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the harzards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

Protection at Only: **£2**

Acorn & Watford DFSs

● Watford sophisticated DFS ROM	£16.00
● Watford DFS Kit complete	£69.00
● We will exchange your existing ROM for Watford's ultimate DFS ROM at only	£12.00
● DFS Manual (comprehensive)	£6.95
● Acorn DNFS ROM	£17.00
● Acorn ADFS ROM only	£25.00
● Acorn 1772 DFS ROM Kit	£49.00

(The single Density DFS system is now old technology. Like Acorn, Watford too have decided to replace it with the their more up-to-date 1770 DDFS interface. We have informed most of the software houses of this decision in order that they can ensure compatibility with our highly sophisticated and fully Acorn compatible DDFS).

Watford's MkII 1772

Single/Double Density DFS

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1770 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1770 DFS, plus the added features.

Added features include:

- Acorn ADFS compatible – Use ADFS on our DDFS board.
- Tube host Code – No longer any need to have the DNFS in your machine to use Co-Processors, even the CoPro and Master 512.
- Auto 40-80 Track sensing – no need to fuss with 40/80 track switches (even works with protected disks).
- An extremely powerful 8271 emulation – ensuring compatibility with almost all software.
- New low profile – small footprint board.
- Fits with all third party ROM boards.
- Option to double the speed of file handling operations – BPUT and BGET.
- Operates in both single and double density modes.
- OSGBPB has been recoded, increasing still further the speed of file handling.

Please note that not all DDFS's are capable of providing either the full 80% storage increase or of allowing a file the full size of the disk – Ours allows both of these!

If you already have a DDFS (any manufacturer), and wish to upgrade to our MkII version, then simply return your existing ROM and DDFS board and we will supply the new DDFS for only **£39.00.**

● SPECIAL PRICE	£44.00
● DDFS Manual	(No VAT) £6.95
● We will exchange your existing DFS Kit for our sophisticated DDFS for only	£30.00

Please note, as the MkII DDFS is a hardware and sofware upgrade, it is not possible for existing Watford DDFS users to simply exchange the ROM for the new version.

3M – Diskettes

3M – SCOTCH Diskettes with Lifetime warranty from Watford Electonics your 3M Appointed Distributor

● *10 x 5.25" S/S D/D 40T (744)*	***£5***
● *10 x 5.25" D/S D/D 40T (745)*	***£5***
● *10 x 5.25" S/S D/D 80 Track (746)*	***£7***
● *10 x 5.25" D/S D/D 80 Track (747)*	***£7***
● *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT*	***£11***
● *10 x 3.25" S/S D/D 40/80 Track*	***£7***
● *10 x 3.25" D/S D/D 40/80 Track*	***£8***
● *10 x 3.5" Double Sided High Density*	***£15***

Top Quality 3.5" & 5.25" Diskettes

To complement our range of Quality Discs and Disc Drives. WE are now supplying SPECIAL OFFER packs of 10 Lifetime guaranteed discs. Each disc has a reinforced hub ring. Supplied complete with selfstick labels and a Plastic Library Disc Box.

● *10 x **M3** 3.5" D/S D/D 80 Track*	***£7***
● *10 x **M9** 3.5" D/S High Density*	***£14***
● *10 x **M4** 5.25" S/S D/D 40 Track*	***£5***
● *10 x **M5** 5.25" D/S D/D 40 Track*	***£5***
● *10 x **M7** 5.25" D/S D/D 80 Track*	***£7***
● *10 x **M8** 5.25" D/S H/D Hi-Density*	***£11***
● ***M2** 3" Double Sided*	***£2.50** each*

CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383

Floppy Head Cleaner Kit

The heads in floppy drives are precision made and very sensitive to dirt. The use of cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. it is very simple to use. Available in 3.5" & 5.25", please specify.

Price £4

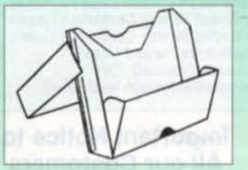
Antistatic Lockable Disc Storage Units

Gives double protection – Strong plastic case that affords real protection to your discs.
Antistatic helps avoid data corruption whilst in storage. The smoked top locks down.
Dividers and adhesive title strips are supplied for efficient filing of discs.

● **M35** – holds up to 50 5.25" discs	£4.95
● **M85** – holds up to 95 5.25" discs	£6.95
● **M25*** – holds up to 25 3.5" discs	£4.95
● **M50** – holds 50 3.5" discs	£6.50
● **M10** – holds 8 of No. 10 Data Cartridges	£15

* Not lockable

Plastic Library Cases



Holds up to 10 5.25" Discs. **Only £2.00**

Dust Covers (For our Disc Drives)

Single CLS (without PSU)	£3.20
Single CS (with PSU)	£3.25
Twin CLD (without PSU)	£3.85
Twin CD (with PSU)	£3.90

Disc Albums

Attractively finished in black leather-look vinyl. Stores up to 20 discs. Each disc can be seen through the clear view pocket.

£4

Special Bulk Offer on Discs

(Supplied packed in Anti-Static Lockable Storage Units)
(Lifetime warranty on Discs)

PRICES SLASHED

BULK PACK DISCS in lots of 100

Type	S-S 40T	D-S 40T	D-S 80T
● Without Sleeves 5.25"	£30	£35	£40
● With Sleeves 5.25"	£33	£38	£43
● 3.5" D/S D/D	£22 for 50	£40 for 100	

Quality Disc Drives from Watford

To help you decide which drive is the most suitable for your needs (and your pocket!), we have produced the table below. The tinting of the boxes indicates 40/80 track switchable disc drives. For ease of use, the switches are mounted on the front panel.

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. *Extensive experience of the usage of disc drives suggests that the JAPANESE drives currently represent about the best in terms of speed, reliability and overall "elegance" available for the BBC Micro.*

Various UK "manufacturers" of disc drives for the BBC micro (more accurately, "packagers" label other manufacturers drives with their own name). We buy the high qulity NEC and Mitsubishi drives in large quantities directly from the manufacturers, package them and sell them at "dealer" prices direct to the public.

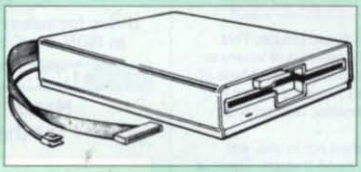
If you look around the popular BBC micro press, you will find that the prices we quote for the top quality, new slimline disc drives are, virtually without exception, some of the best around. These prices, coupled with the backup of one of the country's largest distributors of BBC peripherals provides a superb deal.

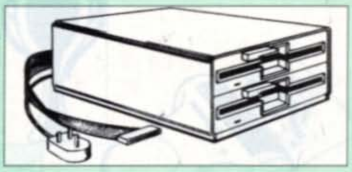
Unless you anticipate using dual drives in a fully expanded BBC system for long periods of time with little ventilation, then we suggest that our range of "CL" disc drives without the PSU (Power Supply Unit) would be quite adequate (extensive tests within our workshops have confirmed this). All drives are supplied complete with a SPECIAL UTILITIES Disc, Cables and Plugs. The Drives with power supply have a mains moulded plug for safety purposes. ***Ideal for Schools & Colleges.***

When using a BBC Micro, most people find themselves short of desk space. The Watford's BBC Micro plinths form an ideal way of recovering some of this precious space) your BBC Disc Drive and Monitor can all occupy the same vertical footprint and still be comfortably situated. With the Watford Double plinth, your Disc Drive is mounted vertically at one side, leaving a very valuable area directly in front of you for such useful items as spare discs, pen, paper, reference manuals, etc. Follow the trend with a Watford plinth. (Turn to the 4th page of our advert for the Plinths).

P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is the special Compact Disc Drive Cables designed by us.

Our Disc Drives conform to BS415





"Test Bureau Approved for Use in Education"

Capacity	Drives without P.S.U.		Drives with P.S.U.	
	Single	Twin	Single	Twin
400K (720K)	CLS 400S £74		CS 400S £83	
800K (1,44M		CLD 800S £149		CD 800S £162

- TWIN Disc Drive Case, complete with Power Supply & Cables **£43**

Securicor carriage on Disc Drives £6 to £7

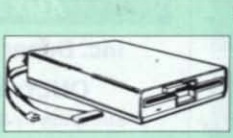
Prefix	***C** = Cased Drive* ***L** = Less PSU* ***S** = Single* ***D** = Double*	*Suffix*	***S** = 40-80 Switchable*

e.g. *CLS400S = Cased Disc Drive, Less power supply unit, single 5.25" 400K, (720K in double density); Double sided; 40/80 track switchable.*

Refurbished Disc Drives now available
CLS400 £50; CLD800 £98; CS400 £59; CD800

Special Cable to connect both 3.5" and 5.25" Disc Drives simultaneously to the BBC Compact £13

Special 40/80 Disc Drive/DDFS Mk II Offer



- The popular 40/80 track 400K single Disc Drive, Double Sided, cased with Cables. Plugs directly to your Micro.
- Watford's extremely popular DDFS Disc Interface (allows 720K storage). Will run in both Single & Double Density modes.
- A comprehensive User Friendly Manual.

A Bargain at Only **£119** (£7 carr) (Offer valid while stocks last)

3.5" DISC DRIVE OFFER

These top quality 3.5" Double sided, 80 track, 1 Megabyte (unformatted each Disc Drives), are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Drives to connect to BBC Micros own PSU

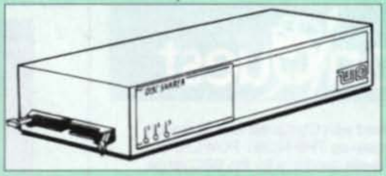
● **CLS35 400K Unit**	**£65**	● **CLD35 Twin 800K**	**£119**

Drives with built-in Power Supply Unit

● **CS35 Single 400K**	**£85**	● **CD35 Twin 800K**	**£129**

(P.S. CS35 Single is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage).

DISC DRIVE SHARER

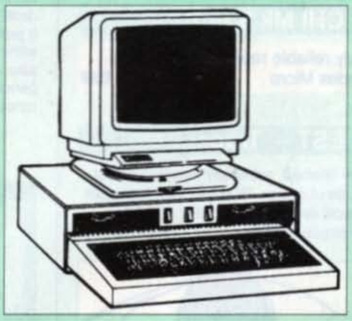


(Ideal for educational establishments)

At last, a low cost alternative to the Econet system.Watford's Intelligent Disc Drive Sharer allows you to connect 3 BBC micros (model B, B+ and Master series) to a single or double disc drive. Running under any DFS or DDFS, this intelligent unit will automatically queue the computers. Each computer has a status light dedicated to it. If it is green you will get immediate access to the disk, and red means that you are next in line. The unit plugs directly into the disc drive socket on each computer and is powered by the mains. (N.B. Not for use with ADFS.)

Price includes 3 Cables Offer Price : **£55**

CDPM 800S DP35-800S



Twin 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC Micro. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

CDPM 800S for the BBC B & Master £165

A Double disc drive with a difference! Times are changing fast for the floppy disk, and whilst the current standard for the BBC B and Master series is the 5.25" disk, the standard of the future will most certainly be the smaller; faster and more reliable 3.5 inch disks – now a standard feature of both the Master Compact and the Archimedes Series.

To support the present disc drive users, and cope with the future, we have designed our own plinth-mounted disk system – called the DP35 800S. It contains both the 5.25 inch and the 3.5 inch drive formats as well as offer a firm and rigid support for a monitor on top. With the BBC Micro underneath, the plinth makes a surprisingly small footprint on the desk – leaving you more space to work with.

The 5.25" disc drive is 40/80 track switchable. DP35-800S has its own power supply, independent of the BBC Micro.

DP35-800S for BBC/Master £154

(Securicor Carr. £7)

(The above drive units are 2 Megabytes unformatted)

Continued→ → → → → → → → →

QUEST MOUSE Mk II

● Quest Mouse II & Quest Paint	£58
● Quest Mouse II, Quest Paint, AMX Stop Press & Pagefont	£89
● Quest Mouse II only	£29
● Quest Paint Software only	£34
● Quest Font Disc (22 Text Fonts)	£15
● Quest Mouse Mat (Red or Blue or Green please specify)	£3
● Part Exchange your unreliable AMX Mouse for a Quest Mouse for only	£22

(P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

ConQuest

Quest combined with ConQuest and Acornsoft GXR ROM make up THE MOST POWERFUL drawing packages available for the BBC range. Quest Paint is able to take advantage of almost any additions to your machine, such as Shadow or Sideways RAM. ConQuest takes this principal even further, by utilising the otherwise normally incompatible Sideways RAM facility by holding pictures in them.

ConQuest ROM Package	£30

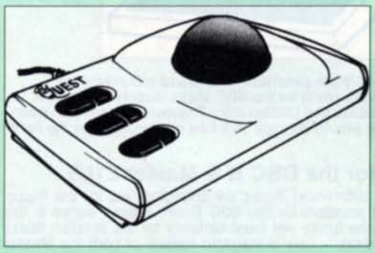
(Price includes software in ROM and a comprehensive Manual).
(Not Compatible with BBC Compact)

ARCHI Mk II MOUSE

An extremely reliable replacement mouse for Archimedes Micro	£39

QUEST – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.



QT-10 BBC/Master Version	£32
QT-20 Archimedes Version	£35

RB2 Marconi TRACKER BALL

RB2 (AMX/Quest compatible)	£45
RB2 including Quest Paint	£75
RB2-A for Archimedes	£46

THE NEW Mk III AMX MOUSE

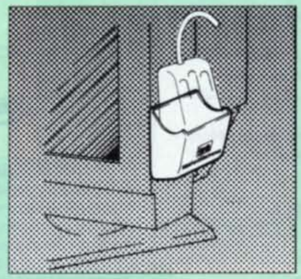
Inc. Super Art package

ONLY: £59 (carr £3)

(Please specify for BBC, Master or Compact)

MOUSE MAT	£3
AMX MOUSE ONLY	£29
AMX SUPERART Package	£34
AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse	£32
PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker	£13
AMX DESIGN (ROM)	£55
AMX XAM Educational	£15
AMX EXTRA EXTRA	£16
AMX MAX A gem of desktop (ROM)	£20

WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive or desk.
It protects it from damage when not in use, yet within easy reach when you need it again. There is also a second compartment for your pens and pencils – and at £4 it doesn't cost a rodent's ransom.

Price £4

Our Mark II Light Pen is the very latest in light pen technology. It is totally insensitive to local lighting conditions and works with many different monitors. The pen only responds to the High Frequency light produced by your monitor/TV. An LED indicates when valid video data is being produced. A conveniently located switch is also fitted. (Price includes FREE software Disc and Operating Manual)

Only £21

FLEET STREET EDITOR

Software pack for BBC Micro	£33
Software pack for the Master	£39
Admin Xtra Disc Utility	£13
Fonts N Graphics Disc Utility	£13

BEEB VIDEO DIGITISER

"Test Bureau Approved for Use in Education"

Using any source of composite video (colour or monochrome) and the Watford Beeb Video Digitiser, you can convert an image from your camera into a graphics screen on the BBC Micro. This uses the full graphics capacity of the BBC micro in modes 0, 1 or 2. The video source may be a camera, video recorder or television, and is connected via the video output socket. The software supplied includes a sophisticated, fast screen dump routine.
Images produced can be compressed, stored to disc, printed on an Epson compatible printer, directly used to generate graphics, analysed for scientific and educational use or converted to other formats e.g. Slow Scan TV or receiving a picture from a remote camera using a modem. The output from the digitiser exactly matches the graphics capability in each mode, with up to 8 levels of grey in mode 2. The unit connects into the User Port and automatically scans a complete picture in 1.6 seconds.

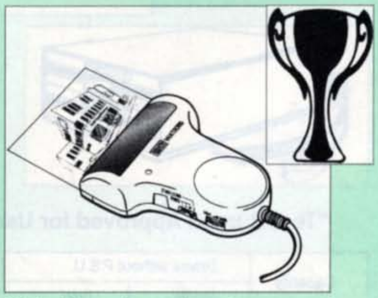
£109 (Carr. £5)

(BBC B+ and Master compatible, except Master with Econet)

(Price includes) Digitiser Unit, Software in ROM & a Comprehensive Manual)

The Beeb HandScan

Hand-held Scanner for the BBC Micro



Watford Electronics are pleased to announce the launch of the first hand held scanner for the BBC Micro. HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs! These useful devices have been available for faster and more expensive micros for some time, but only now is Watford Electronics able to offer the BBC Micro computer.

The HandScan plugs directly into the 1MHz bus on the BBC while a comprehensive set of utilities provided by the sophisticated ROM firmware. The scanner has a resolution of either 100 DPI or 200 DPI when accuracy is essential. Pictures as wide as 4" may be scanned in mode 0 and various types of dithering may be selected to simulate the grey levels of a scanned picture.

All necessary software has been included in the firmware to allow the scanner to read images directly into our Wapping Editor with little more than the click of the mouse. The digitised picture may then be incorporated into your magazine, newsletter, report or any other document.

Beeb HandScan & Firmware	£135

WAPPING EDITOR
"MIGHTIER THAN THE QUILL"

Winner of the BBC Acorn User 1990 Award for the Best DTP/Word Processor

The Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Included with the system is a utility disc containing several high quality fonts, various utilities and a ROM image of a Support ROM. A comprehensive 100 page manual completes the package. The Support ROM contains routines to allow an area to be rotated to any angle or distorted to any four-sided shape. Also included are facilities to draw ellipses at any angle and sectors, segments and arcs (in Master or BBC B with Acorn GXR). Another of the features of the Support ROM is a 'Turbo DFS' which gives DFS access times comparable with those of ADFS.

Page Layout Section

The Wapping Editor may be used to create pages of any size from an A6 to a full A3 page. If none of the eight default page types suit your purpose, the stand-alone page creation program may be used to create pages to your own requirements. By using proportionally spaced fonts and genuine microspacing it is possible to print over 150 characters across an A4 page. A unique feature of the Wapping Editor is the 'A5 x 2' page size allowing two A5 pages to be printed side by side onto a single A4 sheet.

The graphics module incorporates the facilities like: pencil, brush, airbrush, polygon, circle, eclipse, fill, cut & paste, etc.

Text may be typeset, either justified or unjustified, in any font anywhere on the page. Simply select which font and text document you wish to use, and pull out a rectangle on the page where you want the text to be – it's as simple as that! Multiple columns may be printed just as easily and a special 'expand' feature may be used to expand the microspacing so that the document exactly fits the space defined.

Word-Processor

The integral word processor is the ideal tool for producing your text documents, although text can of course be read in from any of the other popular word processors such as View, Wordwise etc.

The Font Editor

The font editor module will allow you to design your own typefaces or to modify the ones provided on the utility disc. This sophisticated editor has numerous functions designed to take the tedium and frustration out of producing good looking, well balanced fonts. Each character may be individully proportionally spaced and characters of any size up to 16 x 16 pixels may be defined.

Pictures may also be 'grabbed' from a video source by using the Watford BEEB Video Digitiser.

Wapping Editor Software Pack **£69**
Wapping Editor plus Mouse **£89**

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc.
Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out.

Music writing symbols in the form of pattern and brush for quick production of manuscripts are included together with staves.

There are two prepared hi-res pages layed out for printing labels, both single and double width. Ready made label designs are included but these can be easily replaced with your own designs.

A Mode 0 screen dump routine is also included. To pack such a large amount of data onto the discs the screens have been compressed and routines to compress and expand Mode 0 screens are included on both discs. Using the packing routine you can archive large numbers of screens onto a single disc.

£15

Wapping Font Disc 1

Sixteen Wapping Editor fonts including smaller versions of Oberon and Daisy and two new sizes of the standard font.
Also included are three Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions.

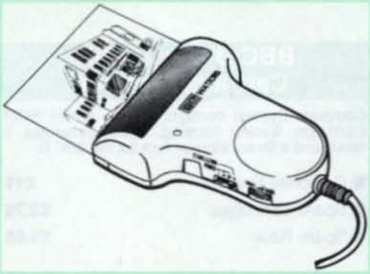
£12

Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts.
On 80 track disc only

£13

Archi Mk II Hand Scanner



Watford Electronics is now able to offer a complete hand held scanning package, possibly the most essential addition to any desk top publishing system. The package includes the most comprehensive utility software available for the Archimedes, a high quality, ergonomically designed to fit the shape of your hand, (see drawing above) scanner, which is fitted with a warning LED that will indicate if the scanner is being moved too quickly for accurate results. Additional twin guide rollers ensure precise tracking over the image, to make the best use of the high resolution available with this system. The yellow/amber illumination of our Mk II scanner, enables you to achieve optimum accuracy. It is capable of scanning upto an amazing 400 DPI. The scanning area is 4" wide and the height is only limited by the maximu amount of memory available.

On board ROM software supplied, is the most sophisticated Archimedes scanner software yet written.

AHS-4 Archi 300/400 Version **£149**
AHS-3 Archi A3000 Version **£175**

CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383

Laser Direct

By using the power of the Archimedes RISC processor, it offers the best of both worlds – print speed up to 5 times faster than typical Laserjet compatibles – uses outline fonts so that any font can be scaled to any size – works with all programs that use RISC OS printer drivers. Ideal for use with Genesis, !Draw, Acorn DTP, Impression, etc. Includes 50 sheet paper tray and a single sheet/envelope tray. Requires one expansion slot and at least a 2Mbyte Archimedes. A very compact printer, a very low initial cost and very low running costs.

Launch Offer: £849

High Res Laser Direct Card **£245**

(For demonstration, call in at our retail shop)

ArcLaser

ArcLaser uses the considerable power of the Archimedes to control the Laser printer directly via a very high speed interface software. This gives speed and economy. The Scaleable fonts facility enables every font to be scaled to any size at 400 dpi, and in portrait or landscape mode. Full Page Graphics produced in 20 to 60 seconds at 300 dpi typically.

Introductory Offer: £799

(Price includes, Laser Engine, Card, Software & Operating manual)

Beeb PC (BASIC)

Beeb PC Basic is designed for program authors wishing to convert programs so that they will run on IBM personal computers. To convert BBC BASIC programs manually can waste days of valuable time with every occurrence of common statements such as PROC, DEFPROC, TAB, having to be changed.

Beeb PC (BASIC) automates many of these changes, and will convert majority of BBC statements that are invalid for IBM BASIC into equivalent acceptable statements. In addition BBC BASIC data files can be converted to IBM BASIC format, with support provided for all BBC data formats:- INTEGER, REAL & STRING.

Price: £38

Beeb DOS 2.2

The BBC and IBM PC's are the most popular micros in the UK. The BBC is firmly established in the education sector and the IBM is the industry standard in the business world. The pools of information and applications held on these computers are immense, yet the means of passing information between them are very limited. Beeb DOS provides a practical method of transferring information between these two micros.

Beeb DOS is a collection of utilities which run on the PC's and enable it to read and write information on BBC discs. You can transfer files between your PC's 360K floppy, high density floppy or hard disc and your BBC discs. In addition Beeb DOS allows you to catalogue, format and compact BBC discs and delete, re-name, lock and unlock BBC files, all on PC's. Each Beeb DOS utility is written in IBM assembler and is run directly from PC or MS-DOS. The Beeb DOS utility can be run from floppy disc, hard disc or RAM drive.

Beeb DOS is supplied on an IBM 5.25", 360K disc complete with a comprehensive operating manual.
(Will only work on 360K Disk Drives)

Price: £39

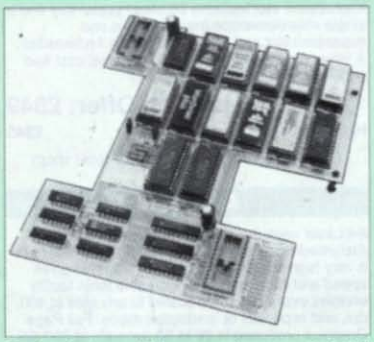
(Please write in for technical literature)

Continued→ → → → → → → → →

STAFF VACANCIES

Watford Electronics is the leading supplier in the Acorn computer field and has established itself in the PC compatible market with its Aries PC computers. In its eighteen year history, Watford has always kept itself at the forefront of the new technology. Due to our latest expansion, we require staff to man our BBC/Archimedes and PC Technical Departments. Applicants will be required to be familiar with BBC/Archimedes hardware and software, and PC staff will need to be familiar with PC computer hardware. Good rates of pay, excellent prospects. Subsidised company accomodation is available to single persons if required. Telephone Keith Archer or Richard Overfield for interview, or write to us enclosing your CV.

Solderless Sideways ROM Socket Board



The key features of this new, no fuss, easy to install quality product from BBC leaders Watford Electronics are as follows:

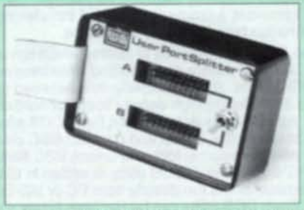
- Increase your BBCs capacity for ROMs from 4 to 16.
- **No soldering required.**
- Very low power consumption.
- Minimal space required.
- Compatible with Torch, DDFS, RAM Card, 2nd Processor, etc.
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish") allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £35
Battery Backup fitted **£39**
Battery Backup only **£3**
16K Sideways RAM **£8.50**
(carriage £3)

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer.

Only: £8

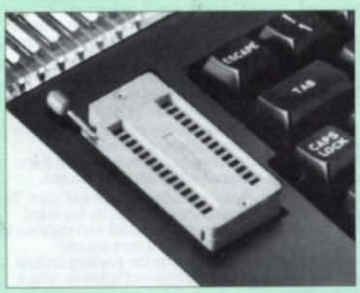
User Port Splitter Unit



Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows two units to be connected to the User Port simultaneously, and select between them simply by toggling a switch. This device is particularly useful for those people using Quest Mouse and the Watford Video Digitiser or any similar combination

Excellent Value at **£22** (carr £2)

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without opening the lid. The ZERO INSERTION FORCE (ZIF) socket is located into the ROM Cartridge's position.

- Very simple to install. NO SOLDERING required. The ZIF (Zero Insertion Force) eliminates the possibility of damage to your ROM pins when inserting & extracting.
- The low profile of the socket allows unrestricted access to the Keyboard.
- All data and address lines are correctly terminated to ensure correct operation of suitable ROMs with the BBC micro. We also supply a purpose designed see-through storage container with anti-static lining, allowing you to store up to 12 ROMs, protecting them from mechanical and static damage.
- This versatile hardware solves the problem of running out of socket space. Simply lift the ROM from the ZIF & insert a different one (No pulling or pushing of Cartridges. It is a must for professionals and Hobbyists alike.)
- BBC, B+ and Master compatible.

ONLY **£18** (carr £3)

BBC B Low Profile Cartridge System

Complete System consists of: Low profile ROM Cartridge, Socket housing, Cable assembly, 5 labels and a library storage rack for the BBC B.

● Complete System	£11
● Spare Cartridges	£2.75
● Spare Rack	£1.65

ROM Cartridges for the BBC Master

Will accept the new larger Piggy Back ROMs like: Interword, Interbase, Quest, Conquest, etc

Twin **£9;** Quad **£14**

16K Disc Ram Module

(16K Sideways RAM Module)

Complete with such features as read and write protection, these new modules from Watford Electronics are ideal for the hobbyist, software developer and ROM collector.
Key points to note about this new addition to the Watford range of products are:

- Write protection (useful in a variety of circumstances)
- Compact construction
- No overheating or overloading problems.
- Free utilities disc supplied
- Can be used as a 16K PRINTER BUFFER.
- Ideal for profressional software development.
- Supplied with utilities software disc.

Only: **£29** (carr £2)

Optional Battery back-up fitted £3

ARIES CORNER

B-32 Shadow RAM Card

Like the BBC B+, the B32 provides 20k of shadow screen RAM and 12k of sideways RAM. Unlike the B+, the B32 has simple software commands which allow the user to reconfigure the RAM as 16k of shadow RAM and 16k of sideways RAM, or all 32k as sideways RAM.

With the B32, the programmer gets up to 28k of RAM available for Basic, Logo, Cobal, Forth, Lisp and BCPL programs in any screen mode. The business user gets extra memory for View, ViewSheet, Wordwise Plus, Interword and many other applications. For advanced applications, the scientific user gets access to a massive 47k of data storage using the Acorn approved ★FX call.

Sideways RAM enables you to load sideways ROM images from disc, allowing you to have a large library of sideways ROMs (subject to the copyright holder's permission) stored on disc. The B32's sideways RAM can also be used to extend any operating system buffer (such as th printer buffer) or to load tape programs into a disc system.

The B32 simply plugs into the 6502 processor socket on you BBC micro – no flying leads to connect and no soldering. Provision of the onboard ROM socket means that the Aries-B32 control ROM does not use up one of your existing ROM sockets.

- Recommended by Computer Concepts for use with their Inter series of ROMs.

Price: **£69** (carr. £3)

Aries B-12 Sideways ROM Board

The B-12 provides a total of twelve sideways ROM sockets (the four in the original machine are replaced by the twelve on the board), all fully accessible by the MOS sideways ROM system. In addition, there are two sockets for sideways RAM, giving up to 16k of RAM using 6264 static RAM chips.

If you do not have a B32 or B20, a small adaptor module (the Aries-B12C) is available at a nominal cost

Price:		
	Aries B-12	**£36**
	Aries B-12C	**£5**

Aries B-488 IEEE-488 Interface Unit

The Aries-B488 is an interface unit to enable the BBC micro to control and monitor IEEE-488 bus systems. The IEEE-488 bus (also known as the 'GPIB or 'HP IB') is the standard method of interconnecting programmable laboratory instruments and control equipment. Using the B488, up to 15 devices may be connected in a single high-speed data network.

£238 (Carr £3)

Voltmace Joysticks

Delta 3B Single Joystick	£10
Delta 3B Twin Joysticks	£15
Delta 3C Joystick for Compact	£10
Delta 14B Single Joystick	£11
Delta 14B/1 Adaptor Module	£12
Transfer Software Disc-Tape	£7
Delta-Cat A mouse eliminator Joystick for the Archimedes	£24

Delta Base B

Analogue aircraft style yoke Joystick to run in the analogue port of the BBC B & Master 128 £25

ROM/RAM Card

Watford Electronics announced the first ever commercial ROM board for the BBC micro, the Watford Electronics 13 ROM Socket Board 7 years ago. Following the success of this board, we have designed what probably represents the ultimate in expansion boards, the new Watford Electronics ROM/RAM board. This highly versatile and sophisticated board represents the latest in "2nd generation" sideways ROM technology for the BBC micro, designed to satisfy the serious BBC user.

- NO SOLDERING required to fit the board.
- NO User Port corruption (avoids problems with the mouse, modems, Eprom Programmers, etc.)
- Fully buffered for peace of mind.
- Compatible with BBC micros (not BBC+ or Master).
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).
- Option for 16k of battery backed CMOS RAM (CMOS RAM needs one ROM socket).
- Software Write protect for ALL RAM.
- Read protect for CMOS RAM (ALLEVIATES crashes during ROM development).
- Separate RAM write register (&FF30 to &FF3F).
- Automatic write to currently selected RAM socket for convenience.
- FREE utilities disc packed with software.
- Compatible with our DDFS board, 32k RAM Card, Delta Card, sideways ZIF, etc.
- Large printer buffer.
- UNIQUE fully implemented RAM FILING SYSTEM (similar to the popular Watford DFS).
- ROM to RAM load and save facilities.

The SFS (Silicon Filing System) can utilise up to the full 128k of RAM (with the SFS in any paged RAM) as a SILICON DISC. This behaves as a disc drive, with all the normal Watford DFS features (including OSWORD &7F for ROMSPELL, etc.) to provide an environment that looks like a disc but loads and saves MUCH faster.

The ROM-RAM Board plugs into the 6502 CPU socket. This leaves free all the existing ROM sockets, which can still be used normally.

Any ROM that can be plugged into the BBC micro's own ROM sockets may be used in the ROM-RAM Board.

The ROM-RAM Board is supplied with all ordered options fitted as standard. Upgrade kits (with full instructions) are available for all of the options, for later.

INTRODUCTORY PRICES:

● ROM/RAM card with 32k dynamic RAM	£48
● ROM/RAM card with 64k dynamic RAM	£65
● ROM/RAM card with a massive 128k dynamic RAM	£109

(carriage on ROM-RAM Card £3)

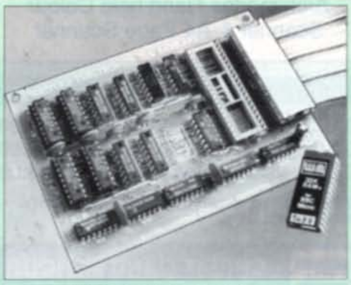
OPTIONAL EXTRAS:

● 16k plug-in Static RAM kit	£9
● 16k Dynamic RAM for Upgrade	£13
● Battery backup	£3
● Read and Write protect switches	£2 each
Complete ROM-RAM board All options installed	£115

P.S.

IS your existing ROM Board overflowing with ROMs? Do you need more Sideways RAM? Is your Board unreliable? Then upgrade to Watford, ROM/RAM Board and pay £5 less.

32K Shadow RAM/Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

Don't throw away your BBC B for a BBC B Plus or BBC Master. Just plug the ribbon cable into the 6502 processor socket, and fit the compact board inside the computer. Immediately you will gain not 16k or even 20k, but a massive 32k of extra RAM!!!

- IMPROVE your WORD PROCESSING system, whether disc or cassette based. Don't wait for a slow printer – type in text while printing. TWO JOBS DONE SIMULTANEOUSLY and £100+ saved on a printer buffer.
- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28,000 bytes free – 5 times as much as normal.
- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.
- Combine GOOD GRAPHICS and LONG PROGRAMS. Use the top 20k of the expansion RAM as the screen display memory, leaving all the standard BBC RAM free for programs. Benefit from MODE 0/1/2 graphics and 28k of program space.
- Use the FULL 32k or the bottom 12k of the expansion RAM as a PRINTER buffer for PARALLEL or SERIAL printers, sound channels, RS432 etc. Print large text files while running long graphics programs, and have all your buffer options available as well (*FX15,21,138, 145,ADVAL etc). Please note only a 12k printer buffer can be used with Wordwise or Wordwise-Plus, due to the way they are written.
- Unique facility to turn ROMs off and on again. Unlike all other ROM managers, this feature does not use 'unofficial' memory. Two bytes of normally user-inaccessible memory on the RAM card are used to ensure ROMs are disabled WHERE OTHER ROMS FAIL.

Only £59 (carr £3)
(Price includes a comprehensive manual and the ROM)

BBC SOFTWARE'S Popular Educational Software

● Maths with a Story 1 (Disc). 4 primary level maths programs	£11.25
● Maths with a Story 2 (Disc). 4 further maths programs.	£11.25
● Picture Craft (Disc) 6-14 age group. Pack consists of flexible geometrical design & colouring programs.	£17.00
● ECOLOGY O-Level program.	£20.00
● POLYMERS O-Level program.	£20.00
● Classification & Periodic Table O-Level. The suite is supplied with its own database of chemical elements which can be classified according to your own rule.	£20.00
● DEUTSCH DIREKT! (Disc & Audio Cassette)	£19.95
● ADVANCED TELETEXT SYSTEM	£8.65
● PERIOD TABLE SOFTWARE	£20.00
● Astronomy – Primary (Disc)	£12.00
● Computers at Work – Primary	£17.35
● Introducing Geography 11-17 years	£17.50
● Electric Fields 6-14 years	£11.25
● Black Queen Contract Bridge	£13.00
● Espana Viva – 3 Discs	£19.95
● WHITE KNIGHT Chess game	£16.00
● Inside Science	£22.00
● A Vous La France	£29.00

More Educational Software

● **FUN SCHOOL 2 – Red:** Under 6 yrs – 8 programs on Discs, Shape Snap, Find the Mole, Teddy Count, Write a letter, Colour Train, Pick a Letter, Spell a Word & Teddy Bears Picnic.	**£12.00**
● **FUN SCHOOL 2 – Green:** 6-8 yrs – Eight programs on Disc, Number Train, Shopping, Maths Maze, Treasure Hunt, Bounce, Packing Caterpillar, 3 Number jump	**£12.25**
● **FUN SCHOOL 2 – Blue:** Over 8 yrs – Eight programs on Disc, Build a Bridge, Passage of Guardians, Unicorn, Logic Doors, Souvenirs, Code Boxes, Mystery Machine & Escape.	**£12.50**
● **FUN SCHOOL 3 – Red**	**£19.95**
● **FUN SCHOOL 3 – Green**	**£19.95**
● **FUN SCHOOL 3 – Blue**	**£19.95**
● Six French Games – Aimed at pupils in their first year of French, but also useful as revision for more advanced students 11 years+	**£26**
● More French Games – Another 6 games 12 years+	**£26**
● Au Restaurant and Accident de Route 12 years+	**£26**
● Boulogne and Oh-Les – 2 programs for beginners	**£26**
● Letters to French Penpals – 11 years+	**£26**
● French Programs with Henri Beret – The programs in this series present vocabulary, grammar and role-play phrases in the form of animated games. 11-16	**£22**
● Six German Games – Aimed at pupils in their first year, but useful as revision for more advanced student of German. 12 years+	**£22**
● More German Games – Aimed at pupils in their 2nd year of learning German. 12 years+	**£22**
● The Cloze Program – Using context clues to predict is much more than a gap filling exercise. All ages	**£26**
● An Introduction to Electronics – Brings together all the basic electronics required for a GCSE Physics or CDT course. 14-16 years	**£26**
● Computer Control – This is a package of 3 programs simulating control of a greenhouse, a robotic arm & a chemical plant. 14-16 years	**£26**
● The Nuclear Reactor – An interactive, menu driven program for GCSE pupils. Demonstrates & explains nuclear fission & the chain reaction. 14-16 years	**£22**
● PUNCMAN Learning punctuation	
Puncman 1 & 2 for 7 – 13 years	**£15**
Puncman 3 & 4 for 8 – 14 years	**£15**
Puncman 5 & 6 for 8 – 15 years	**£15**
● Yes Chancellor – A chance to take over number 11 at Downing Street. 12 years+	**£18**
● Letters & Pictures – Introduces phonic skills to Infants 6-8 years	**£15**
● Numbers & Pictures – Early number learning is a great fun (4-6 years)	**£15**
● Note Invaders – Budding musicians can learn the notes on the Clef with this elegant game 3 programs (7 to Adults)	**£15**
● Maps & landscapes No. 1 (9-14 years)	**£18**
● Help Your Child learn Basic Map work No. 2 (9-14 years)	**£18**
● Pirate – Educational Adventure (8-14 years)	**£15**
● Spelling Week by Week (6-14 years)	**£18**

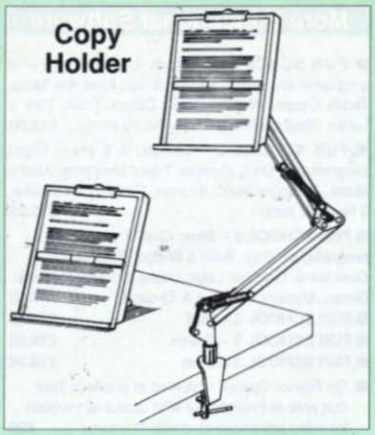
Archimedes Software

● BUMPER DISC	**£14**	● Jigsaw	**£28**
● Bumper Disc 2	**£14**	● Craftshop 1	**£28**
● Bookbinder	**£43**	● Desktop Stories	**£27**
● Craftshop 2	**£29**	● Droom	**£17**
● DigiSim	**£35**	● Numerator	**£60**

● Gate Array Teaching System	**£68**
● Fun School 2A Red (up to 6 years)	**£14**
● Fun School 2A Green (6-8 years)	**£14**
● Fun School 2A Blue	**£14**

Continued→ → → → → → → → →

Copy Holder



Whether you want to type in your latest program or the draft of a new trilogy, Watford's manuscript holders are superb for holding your paper at the ideal height and angle to allow you to read and type in ease and comfort.

Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip. (for resting books or magazines, the desk top version is recommended).

Desk Top **£7** (carr. £3)
Angle poise **£12** (carr. £3)

OFFICE MASTER

CentreSoft
Office Master

CASHBOOK – A complete "Stand Alone" accounting software package for the cash based sole trader/partnership business. It is designed to replace your existing cashbook system and will provide you with a computerised system complete to trial balance.

FINAL ACCOUNTS – Will take data prepared by the Cashbook module and produce a complete set of accounts as following: Trial Balance with inbuilt rounding routine; Notes to the accounts; VAT Summary; Profit & Loss A/C; Balance Sheet.

MAILIST – A very versatile program. Enables you to keep records of names and addresses and then print, examine, sort and find them, all with special selection techniques.

EASILEDGER – A management aid software tool designed to run alongside an existing accounting system. Essentially a Debit/Credit ledger system which can handle sales, purchase and nominal ledger routines to provide instant management information.

INVOICES & STATEMENTS – Greatly reduces the time and cost of preparing Invoices and Statements by storing essential information like customer names, addresses and account numbers. Has VAT routines and footer messages facility.

STOCK CONTROL – Allows you to enter stock received, stock out, summary of stock items and current holdings together with details of total cost, total stock to minimum level, units in stock ordering, quantity and supplier detail.

All this for only **£21** (Disc)

OFFICE MATE

CentreSoft
Office Mate

- DATABASE
- BEEBCALC SPREADSHEET
- BEEBPLOT GRAPHICS

DATABASE – Set up a computerised card index system with powerful search facilities.

SPREADSHEET – Offers many calculation and editing features

BEEBPLOT – Provides visual representation from Spreadsheet data.

OFFICE MATE Only £10 (Disc)

Coming soon . . .

Archimedes Hand held Colour Scanner & A4 Page Scanner

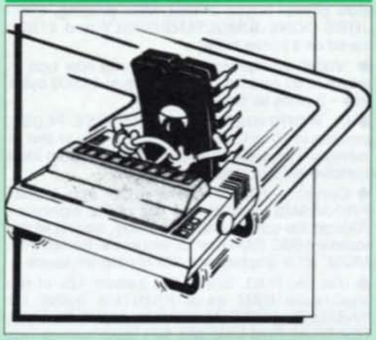
MINI OFFICE II

DISC Version for BBC B & B+	**£14.00**
DISC Version for BBC Master	**£16.00**
DISC Version for the Compact	**£18.00**

(When ordering please specify for which Micro & 40 or 80 track Disc)

CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383

VIEW PRINTER DRIVER ROM



View is a powerful word processor, but until now has seriously lacked in terms of printer support. With the launch of our Printer Driver ROM, which includes an extremely powerful and easy to use Printer Driver Generator, View users can find themselves in the realms of advanced word processing at only a small outlay.

The VPD extends View's printer command with a series of mnemonic commands. All standard highlight sequences are also supported. A large range of printers are supported by drivers contained within the ROM (the drivers can be downloaded and customised). Printers supported include: Epson's MX, RX, FX, LX, JX80 range, HI80, KP810/910, PW1080, JP101, HR15, M1009, GLP, Panasonic KX-P1081/2, JUKI 6100, etc.

Other printers are readily supported by defining a Printer Driver using the built-in Printer Driver Generator. The features mentioned below are available to both the built in Printer Drivers and user defined drivers (assuming the printer supports the features).

NLQ control, Underline, Bold, Proportional Spacing, Microspacing, Italic, Superscript, Subscript, Condensed, Enlarged, Double Strike, Set lines per inch numerically (e.g. LPI 6), Set characters per inch numerically (e.g. CPI 5), Select printer font, Select printer ribbon colour, Translation sequences, Emulation of BBC Character Set, Simple numeric expressions for certain operations, Full printer setup, Send control codes, Print prompt on screen, Redifinable Pad character, Pause for key press, Prompt to change daisywheel, and Execute ★ command when printing.

Other features include a very powerful on-screen preview, with bold, italic, underline, super/subscript, enlarged highlights, and a special printer driver to allow memory-based text to be previewed by View 1.4. Of course, View 1.4, 2.1 and 3.0 are all supported, as is Shadow RAM and 6502 Second Processors. The BBC B series and Master series of micros are supported. A comprehensive manual is supplied. All in all, a very professional product for the discerning user who wants power at their finger tips.

Price: Only £33

Computer Concept's ROMS

Communicator	**£49**
Disc Doctor	**£28**
Inter BASE	**£49**
Inter CHART	**£25**
Inter SHEET	**£37**
Inter WORD	**£36**
Mega-3 ROM	**£76**
Spell Master	**£42**
TERMI	**£25**
Wordwise	**£24**

Wordwise plus

£40

We are giving away absolutely **FREE**, the superb Word-Aid ROM worth £24, with every WORDWISE PLUS package bought from us.

Word-Aid

The most comprehensive utilities ROM for Wordwise-Plus

Extend the power of your Wordwise Plus word processor with this most advanced ROM from Watford. By utilising the powerful Wordwise Plus programming language, WordAid provides a whole host of extra features, all accessed via a special new menu option. This ROM has been personally approved by Mr Charles Moir, the author of WORDWISE PLUS.

- Alphabetical sorting of names and addresses.
- Text transfer options.
- Chapter marker.
- Epson printer codes function key option.
- Search and display in preview mode.
- Embedded command removal.
- Print Multiple copies of a document.
- Multiple file options for print and preview.
- Address finder.
- Label printer.
- Mail-merger.
- Number/delete/renumber.
- Clear test-segment area.
- BBC B, B+ and Master compatible.

Only **£24**

(N.B. Word Aid requires a Disc interface in your Micro)

Acorn ROMS

View 3.0 ROM	**£45**
View Professional	**£50**
Viewsheet (Acornsoft)	**£36**
Viewstore	**£36**
Viewspell with 80 track disc	**£25**
Viewplot Disc (Please specify for Master 128 or Compact)	**£20**
View-Index	**£12**
Overview packs 1 & 2	**£65**
Hi-View	**£38**

Watford's own Sophisticated View Printer Drivers

Epson FX80 & Kaga KP (Disc)	**£8**
Juki & Brother HR15 (Disc)	**£8**

BOOKS (No VAT on Books)

15 Hr Wordprocessing BBC/View	£6.95
15 Hr Wordprocessing BBC/WW & WW+	£6.95
30 Hour BASIC (BBC Micro)	£12.95
1st Word Plus Rel. 2 Manual	£10.00
A3000 Technical Manual	£29.00
Acorn DTP A Guide to	£17.00
Advanced User Guide for BBC	**£10.95**
Archimedes 1st Step – Beginners Guide	£9.95
Archimedes Assembly Language	£14.95
Archimedes BBC Basic Guide	£20
Archimedes DTP Manual	£10.00
Archimedes Operating System	£14.95
Archimedes Risc-Os Programmers Reference Manual	£79.00
Arm Assembly Lang. Prog. Manual	£15
Assembly Language Prog. for the BBC	£11.95
Assembly Language Quick Ref.	£21.95
BASIC 2 – User Guide	£2
Basic V – A Dabhand Guide	£9.95
BBC Basic Guide (Archimedes)	£19.95
BBC Computer Handbook – The Complete	**£14.95**
BBC Micro – Within the	£11.95
BCPL User Guide	£9
C Big Red Book of	£8.95
C – A Dabhand Guide to	£14.95
C Programming Lang. 2nd Edition	£24.95
COMAL – Introduction to	£9.50
Deutsch Direkt! (Book only)	£5.95
DISC FILING SYSTEM (DFS) Operating Manual for BBC	£6.95
FORTH on the BBC Micro	£9.95
Hackers Handbook – New	£9.95
ISO-PASCAL Reference Manual	£9.95
Mysteries of DISC DRIVES and DFS REVEALED	**£5.95**
Mastering Interpreters & Compilers	£14.95
Master 512 Guide – Dabs Press	£9.95
Master Operating System	£12.95
Master Reference Manual Part 1	£14
Master Reference Manual Part 2	£14
Master Reference Manual – Advanced	£17
Mathematical Programs in BBC BASIC	£9.95
MINI OFFICE II – A Dabhand Guide	£9.95
Mouse User Guide to BBC Micro – the Complete	£5.95
Example Programs on Disc for above	£4.95
PASCAL on the BBC Micro	£9.50
PASCAL Programming	£10.95
Practical Disc File Techniques	£5.95
The Epson FX-KAGA PRINTER Commands REVEALED	**£5.95**
Understanding Interword – A Beginners Guide	£6.50
View 3.0 User Guide	£10
View Guide (View 2.1)	£5.00
View, Viewsheet & Viewstore – Mastering	£12.95
Viewsheet & Viewstore Dabhand Guide	£12.95
VIEW Dabhand Guide	£12.95
Viewsheet User Guide	£10
Viewstore User Guide	£10
Z88 – A Dabhand Guide	£14.95
Z88 Computing	£9.95
Z88 Magic	£14.95
Z88 Using Your	£9.95

Carriage on Books vary between £1 to £3.50, depending on their weight.

BOOKS for IBM PC & Compatibles

1-2-3 Mastering Release 3	£22.95
1-2-3 Mastering – 2nd Ed.	£20.95
1-2-3 Special Edition (QUE) – Using	£22.95
1-2-3 Using – Rel. 3	£22.95
8086/8088 Assembly Language Prog.	£13.50
8086/8088 Programming the	£17.95
Ability – Using	£12.95
Accountancy software in Business – Using	£14.95
Agenda – Using	£21.95
Aldus PageMaker – Using	£21.45
Amstrad PC Programmers Ref Guide	£7.50
Amstrad PC1512-1640 Step by Step – Using	£10.95
Autocad – Mastering Through Rel. 10	£28.95
Autocad – Using Release 10	£27.95
Corel Draw made easy	£24.95
C Programming Library – The	£24.95
dBASE III Plus – Mastering	£19.95
dBase III Plus – Complete Reference	£19.95
dBase III Plus Handbook 2nd Edition	£22.95
dBase III Plus – tips, tricks and traps (QUE)	£20.45
dBase III Plus – Quick Prog. Guide	£8.95
dBase Instant Reference (III & III+)	£10.95
dBase IV – Handbook	£21.95
dBase IV – Understanding	£22.95
dBase IV – Using	£20.95
DBASE IV – Complete Ref	£27.95
Desk Top Publishing by Design	£18.95
DOS & BIOS Function – Quick Ref Guide	£7.95
DOS Instant Reference (up to 3.3)	£6.95
DOS, Mastering for Versions up to 3.3	£22.95
DOS Power Tools (includes a disk)	£45.95
DOS – Programmers Ref. Manual 2nd Ed	£25.95
Excel IBM Version – Using the	£22.95
FAX – Managing with	£12.95
Framework III – Mastering	£22.95
Generic CAD – Using	£22.95
Hard Disc Instant Reference	£10.95
Hard Disc – Managing your 2nd Ed.	£20.95
Hard Disc management – Quick Reference Guide to	£4.95
Hard Disc – Management	£18.95
Hard Disc – Using Your	£27.45
Local Area Networks 2nd Generation	£20.95
Lotus 1-2-3 – Illustrated	£18.45
Microsoft 'C' Systems Prog. In	£23.95
Microsoft GW BASIC	£12.95
Microsoft Windows 3 – Using 2nd Ed	£20.95
Microsoft Word 5 _ Using	£20.45
MS-DOS – ABC's of 2nd Ed.	£17.95
MS-DOS Advanced Programming 2nd Ed.	£22.95
MS-DOS Bible 3rd Edition	£19.95
MS-DOS Handbook 3rd Edition	£18.95
MS-DOS Quick Prog Ref Guide	£8.95
MS-DOS Quick Ref Guide	£7.95
MS-DOS Commands – Quick Reference Guide – including Ver. 4	£6.95
MS-DOS Masters – Tricks of 2nd Ed	£24.95
MS-DOS – Running 4th edition	£19.95
MS-DOS – Supercharging 2nd Edition	£17.95
MS-DOS Users Guide 3rd Edition	£27.95
MS-DOS – Using	£19.95
Netware User Guide	£22.95
Networking Personal Computers 3rd Ed.	£20.95
Norton Utilities – Inside the	£21.95
Norton Utilities – Mastering the	£21.95
Novell Network – The ABC of	£21.95
PageMaker on IBM PC – Using	£22.95
Pagemaker – Using Aldus	£21.45
Paradox – Mastering	£22.95
PC Crash Course 2.0 2nd Edition	£14.95
PC-DOS Using 3rd Ed	£21.95
Programming Guide to EGA & VGA Cards	£24.95
Quattro – Mastering	£21.95
Smart – Using	£21.45
Smartware II – Using	£22.95
Smart, tips, tricks and traps (QUE)	£22.95
Supercalc 4 – Using	£24.95
Supercalc 5 – Using	£20.95
Supercalc Professional	£17.95
Symphony – Using Special Ed.	£27.45
Symphony 4th Edition – Mastering	£24.95
Timeworks Publisher Companion	£12.95
Turbo C Bible	£24.50
Turbo C++	£22.95
Turbo Pascal 5 – Using	£22.95
Turbo Pascal – Advance Techniques in	£20.85
Turbo Pascal – Complete Reference Ver 5	£24.95
Turbo Pascal Disc Tutor	£36.25
UNIX – The Complete Reference	£26.95
Upgrading & Repairing PC's	£25.95
Ventura Mastering – 2nd Ed.	£22.95
Ventura Publisher – Using	£22.95
Ventura Publishing – Instant incl. DISC	£34.75
WORD for Windows – Using	£20.95
Wordperfect 5 – Using	£24.95
Wordperfect Desktop Companion 5	£22.95
Wordperfect Made Easy	£15.95
Wordperfect – Quick Reference V5	£8.95
Wordperfect 5.1 – ABC's of	£18.95
Wordperfect 5.1 Quick Start	£18.45
Wordperfect 5.1 – Using Special Ed	£22.95
WordStar Release 5.0 – Using	£20.45
Xerox Ventura Publishing – Inside	£27.95

The Complete BBC Computer User Handbook

"Why has no-one written a book like this before? It's long overdue".

If you own a BBC-B, BBC B+, Electron, Master 128, Master Compact or Archimedes then this book is for you. It shows you how to get the most from your computer, and how to make the computer work for you. Although some sections are machine specific, most of the information, programs, hints and good solid experience are for the whole range of BBC machines. The general style and level means that both beginner and expert will feel satisfied with the quality and quantity of the material.

GENERAL – Uses and abuses of computers.

HARDWARE – How to design your own work station. Hardware additions (disc drives, ROMs, printers, 2nd processors, etc). DIY alterations.

HARDWARE RUNNING BBC-BASIC – All BBC machines are described with their differences. Compatibility between the various BBC machines. Networks. The Archimedes and its advantages.

GETTING ORGANISED – So that you keep track of your programs and control of your software. Setting up for easier programming sessions.

NEAT PROGRAMMING – Good style. Writing structured programs. Getting the best from BBC-BASIC, Graphics and screen displays. Speeding up programs. Saving space.

GENERAL PROGRAMMING TIPS AND HINTS – with a multitude of examples (eg input vetting, dealing with dates, blanking out function key messages, error trapping, disabling ESCAPE and BREAK, use of EOR with colour, etc).

DEBUGGING – Specific errors and how to handle them. How to test programs fully.

STANDARD PROGRAMS – Assessing word-processors, spread-sheets, databases, graphics packages, communications etc. How to customise them to your own requirements.

COMPUTERS AT HOME AND IN THE OFFICE – Introducing the computer to the office. Program protection. Computers and the law. Communications. Selling your own programs. 28 FULL CHAPTERS, elegantly written and extensively indexed. To dip into, consult, or read from cover to cover, again . . . and again . . . and again . . .

Only: **£14.95** (Book No VAT)

Continued→ → → → → → → → →

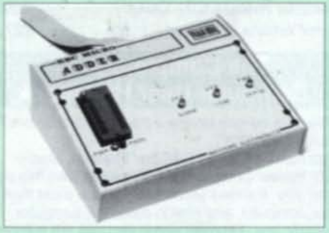
Acorn Speech Synthesizer package complete, for the BBC B Microcomputer

Special Offer £18

Watford Electronics are:

- Acorn Qualified Dealer & Econet Referral Centre
- ARIES PC Dealer/Distributor
- Cambridge Computer Dealer
- Epson Silver Centre
- EIZO Monitor Dealer
- Microvitec Appointed Dealer
- NEC Appointed Dealer
- Panasonic Premier Dealer
- Roland Plotter Official Dealer
- Star Printer Sub Distributor
- Taxan Appointed Monitor Dealer
- 3M Media Premier Distributor

ADDER



The only low cost EPROM Programmer for the BBC Micro that will program both the standard 21V and the new 12V5, 27128 EPROMS.

The Adder unit connects to the User Port and draws its power from there too. The EPROM is mounted in a top quality ZIF socket. There are no switches or controls as Adder is entirely software controlled.

The Adder software provides sophisticated facilities for programming EPROMs from a RAM image produced by loading disc files. The software is menu driven and designed for ease of use.

Features:

- Two ultra fast programming algorithms or standard slow algorithm.
- Supports standard 21V programming and newer 12.5 volt EPROMs. (Software switched).
- The RAM image to be programmed can be built up in many ways. Sections of image can be loaded separately. Part programming. Read EPROM. Edit data in memory.
- Automatic processing to handle a list of files to program into the EPROM.
- Automatic disc buffering to allow programming of 32K 27256 devices from a 32K file without extra effort.
- Verification gives detailed error list and checksums are maintained. There is also a blank check facility.
- Works with all standard filing systems. Generates header code for RFS ROMs to allow Basic programs etc. to be stored in EPROM. More than one file per ROM permitted.
- Programs the following EPROMs: 2516, 2716, 2532, 2732, 2764, 27128, & 27256.

£65 (£5 Carr)

TEX EPROM ERASERS

EPROMs need careful treatment if they are to survive their expected lifetime. Over erasure of EPROMs very rapidly turns them into ROMs! The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast. We use these erasers for all our own erasing work.

- **ERASER EB** – Standard version erases up to 16 chips. **£32**(carr £3)
- **ERASER GT** – Deluxe version erases up to 18 chips. Has automatic safety cut-off to switch off the UV lamp when opened. **£34** (carr £3)
- Spare UV tubes. **£12**

Watch this space for our forthcoming new products for the Archimedes Micro

Servisol Foam Cleaner

This king size multipurpose foam cleaner spray is ideal for cleaning Keyboard, Monitor, Disc Drive & Computer furniture surfaces.

£2.50

Antistatic Aerosol Spray

Ideal for cleaning and preventing static build-up on TV/Monitor Screens.

£2.50

Aerosol Dust Spray

Ideal for removing dust & dirt from Keyboard & similar inaccessible spaces. **£3**

Spares for BBC Micro

BBC Refurbished Keyboard	**£46**
Master Keyboard	**£62**
UHF Modulator	**£4**
Speaker Grill	**£1**
BBC Power Supply	**£59**
BBC B Refurbished Casing	**£25**
Speaker	**£3**
Keyswitch	**£1.50**
16MHz Crystal	**£2**
17.734 MHz Xtal	**£2**
32.768MHz Xtal	**£1**
Master PSU	**£59**
Master Casing	**£49**
Replacement Flexible 17 way Keyboard Connector	**£4**

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightening or thermostats switching.

Protection for only **£8.50**

4 Way Mains Distribution Socket

4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required. Very useful for tidying up all the mains leads from your peripherals.

£9.50

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System

£13.50

ROM Extraction Tool

This extremely useful tool allows you trouble free chip insertion and removal from your computer by distributing the removal force over the whole body of any 24 or 28 pin chip. **£2**

Metal Chip Extractor **£3**

28pin DIL Header Plug

SOLDER type **£1.50** IDC CRIMP type **£1.95**

8 Way DIP Switch

Increase the speed of your Disc Drives by soldering this switch to your BBC B or B+ keyboard

Only **£1.00**

---

28 pin ZIF SOCKET (Textool) **£6.95**

Connecting Leads

(All ready made and tested)

CASSETTE LEADS 7 pin DIN Plug to 3 pin DIN Plug + 1 Jack Plug	**£2.50**
to 7 pin DIN Plug	**£3.00**
to 3 Jack Plugs	**£2.50**
6 pin DIN to 6 pin DIN Plug (RGB)	**£3.00**

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00**; Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

Miscellaneous Connectors

	Plugs	Sockets
RGB (6 PIN DIN)	**50p**	**75p**
RS423 (5 pin Domino)	**70p**	**80p**
Cassette (7 pin DIN)	**40p**	**95p**
ECONET (5 pin DIN)	**35p**	**50p**
Paddles (15 pin 'D')	**150p**	**250p**
Disc Drive Plug 4 way	**100p**	**–**
6 way Power Connector	**120p**	**150p**

Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

£14

Watford POWER DUCK **£8**

CHIP SHOP

1 Meg DIL D-RAM	**£7.00**
1 Meg ZIP D-RAM	**£7.75**
256Kx4 100nS	**£7.75**
DS3691	**£4.50**
DS88LS120	**£5.25**
LM324	**£0.45**
SN76489	**£5.50**
SAA5050	**£8.75**
UPD7002	**£6.00**
2764-250nS	**£3.00**
27128A-250nS (12V5)	**£3.00**
27128-250nS (21V)	**£4.50**
27256-2	**£3.50**
27512-2	**£4.95**
27C101G (1 Meg)	**£10.00**
4013	**75p**
4020	**£1.00**
4164-15	**£2.50**
4464-12	**£7.50**
4464-15	**£7.00**
4816 RAM	**£2.00**
41256-15	**£3.50**
41256-12	**£4.00**
6264LP-8K	**£4.00**
6502A CPU	**£5.00**
65C02 3M	**£9.75**
65C12	**£9.00**
6512A	**£10.00**
6522	**£4.00**
6522A	**£5.00**
62256ALS-15	**£10.00**
62256P-12	**£8.50**
6818	**£4.00**
6845SP	**£6.00**
68B50	**£2.95**
68B54	**£7.50**
7438	**50p**
74LS00	**25p**
74LS04	**25p**
74LS10	**25p**
74LS123	**£1.00**
74LS163	**£1.00**
74LS244	**£1.00**
74LS245	**£1.00**
74ALS245	**£2.75**
74LS373	**£1.00**
74LS393	**£1.00**
75453	**£1.00**
75159	**£3.00**
9637	**£2.00**
ICL7673PA	**£3.00**

Assorted ROMS

ACORN ADFS	**£25**
ACORN BASIC 2 plus User Guide	**£22**
Acorn BCPL	**£42**
ACORN DNFS	**£17**
Acorn FORTH	**£32**
Acorn Graphics	**£25**
Acornsoft C Disc	**£36**
Acorn LISP	**£19**
Acorn OS B+	**£25**
Acorn OS 1.2	**£14**
Basic Editor	**£24**
BBC PCB Designer	**£49**
Beebmon	**£22**
Buffer & Backup	**£20**
Communicator	**£49**
Dump Out 3	**£25**
EPSON NLQ ROM	**£25**
Graphics Extension Rom	
GXR-B	**£21**
GXR-B+	**£22**
ICON Master	**£28**
Logotron LOGO	**£43**
MASTER OS ROM	**£38**
Master ULA (47)	**£15**
Master ULA (60)	**£10**
Micro Prolog	**£25**
Microtext Disc	**£46**
Nicrotext Rom	**£199**
NLQ DESIGNER	**£25**
Numerator – Archi	**£69**
Numerator – BBC	**£39**
Pendown ROM	**£32**
Rom Manager	**£20**
ROMIT	**£29**
SERIAL ULA	**£13**
TED	**£35**
Termulator B, B+	**£28**
Termulator Master	**£32**
Video ULA	**£14**
ULTRACALC II	**£26**
1Mb OS ROM	**£39**

ARIES PC 386-SX

The Aries PC 386-SX combines many of the powerful features of the 386 system with the frugality of a price tag more at home on a 286 system. With 8/16MHz CPU, this system provides virtually full 386 performance, including the more convenient scheme of memory control that allows easy configuration of expansion RAM as EMS for DOS application.

Features:

- 80386-SX CPU with optional 80287/80387 Maths Co-Processor
- 8/16 MHz selectable speed
- Legal Bios with built-in Setup routine
- OS/2 and XENIX compatible

Specifications:

- 1MB RAM on-Board expandable to 16Meg
- 1 x 5.25" – 1.2Meg Drive fitted
- 1 x 3.5" – 1.44Meg Drive fitted
- 40Meg 28mS Hard Disc Drive fitted (1:1 interlaced)
- HDD/FDD Controller Card
- 102 Key Keyboard
- Case with Keylock
- Eight expansion slots
- Two Serial and One Parallel Ports
- Logitech mouse
- 12 months On-Site maintenance
- £300 worth of Software, (MS DOS 3.30, GW BASIC 3.21, Digital Research's GEM, Finesse 1.1 DTP pack, Multiwriter Wordprocessor & Spellchecker, PC Organiser), FREE with every micro.

New Low prices:

● System 1 – Specification as above plus a 14" High Resolution Flat Screen mono monitor	£1098
● System 2 – As system 1 plus a 14" High Resolution Flat Screen EGA Monitor and Card	£1268
● System 3 – As system 1 plus a 14" High Resolution Flat Screen VGA Monitor and Card	£1399
● System 4 – As system 3 (VGA) with 80MB 24mS fast Hard Disc Drive fitted	£1544
● System 5 – As system 3 (VGA) with 155MB 16mS super fast Hard Disc Drive fitted	£1899

PC External Disc Drives

(for IBM PC, Amstrad 1640 & Compatibles. Supplied complete with case, cables and power supply. Ready to plug)

PCS-3L5	3.5" – 720K Cased Drive	£85
PCS-3H5	3.5" – 1M44 Cased Drive	£95
PCS-5L2	5.25" – 360K Cased Drive	£86
PCS-5H2	5.25" – 1M2 Cased Drive	£99

Aries Note Book PC

Full Desktop PC Power
For People On The Move

Imagine an IBM PC compatible laptop that can fit inside your briefcase (with room left over), so light (just over 7 pounds) that it is easy to carry wherever you go, and a choice between AC and rechargeable battery power, so you could use it any-where. The Aries portable has made your dream a reality with the world's most powerful compact Laptop. Also it is the FIRST COMPACT PC PORTABLE, incorporating a HARD DISK at under a £1,000.

The Aries portable has an energy-efficient 80C88 micro-processor that runs at 10MHz, a built-in high-capacity high speed, 20MB Hard disk drive, 1MB RAM, an advance LCD display, and a standard full-size keyboard with comfortable tactile feedback. The Aries Portable also has a full complement of six built-in ports (two RS232, one printer, one external FDD, one RGB monitor), so you can add on extras wherever you settle down. All of this in a case so compact that it can easily fit inside your briefcase.

In his independent review (Computer Shopper, May 1990), the reviewer writes, – "Overall, the single most outstanding feature has to be the price tag. A notebook PC, with a hard disc selling for below £1,000 has no competition at the moment. If you have a small briefcase, weak arms or just like the concept of a truly portable computer then this is your man".

Just read the specification . . .

- **Processor:** 80C86 running at 10MHz Real time clock/calendar
- **Memory:** 1MB RAM (640K,384KbLIM/EMS)
- **Drive:** Built-in 2.5" 20MB Hard Disk Access Speed 28ms (optional external 3.5" 1.44MB)
- **Display:** EL backlit transflective supertwist LCD display, 80 characters x 25 lines, 640 x 200 bit-mapped graphics IBM CGA compatible
- **Stnd Interface** Parallel Printer Port. Two RS232C Serial Ports External disk drive port. CGA Colour monitor port External keyboard port or PS/2 mouse port
- **Stnd.Accessories:** AC mains adaptor/batt. charger. External FDD Convertor Battery pack
- **Dimensions:** 12"W x 2.4"H x 8.7"D
- **Weight:** Just over 7lb (incl. H'Disk/Batt.)
- **Power:** Internal removable Ni-cad batt. AC adaptor, 12V DC. Low battery indicator. Battery charge indicator
- **Bundled Software:** MS-DOS 3.3/GW-Basic Watford Drive package (allows data to be transferred with other PC Compatibles via parallel port. PC Organiser Diary, Calendar, WP

Introductory Offer

● 20 Hard Disc Version	£899
● 3.5" 1.44MB Floppy Version	£599
● External 3.5" Disc Drive 720K1M44	£89
● External 5.25" Disc Drive 1M2	£95

Panafax UF121

Panasonic's Panafax UF121 puts the power and convenience of fax within the reach of everyone who needs to send correspondence quickly and reliably.

Features:

- Automatic Document Feeder accepts up to 5 pages
- CCITT G3/G2 Compatible
- Photocopier facility
- Built-in slimline telephone
- Automatic reception
- Auto/Manual redial
- Individual Transmission Journal
- Header Print
- Multi-purpose LCD Display
- Polling (reception only)
- Voice control function
- Lightweight (approx. 5Kgs)
- Baudrate 9600
- Superfine mode & Halftone
- 10 Station Auto dial & redia

Offer Price: £436

(Price includes 12 months on-site maintenance)

Spare Fax Paper Roll **£4**

APPROVED for use with telecommunication systems run by British Telecommunications in accordance with the conditions in the instructions for use

Fax-Line Splitter

The Watford Fax-Line fax Splitter doubles the utility of any phone line by automatically detecting and routing incoming fax to the fax machine, otherwise it routes the call to the telephone after a very brief message. Calls can even be directed to an answering machine. Standard BT connections provide simple plug-in-and-go operation. Fax-Line saves you hundreds of pounds in BT rental. **BABT approved.**

Launch Price: **Only £75**

(For a live 24 hour demo of Watford Fax-Line, please phone 0923 22 22 21)

Watford Electronics

250 Lower High Street, Watford WD1 2AN, England
Tel: 0923 37774/240588 Fax: (0923) 33642 Telex: 8956095

Prices subject to change without notice and available on request. ALL OFFERS subject to availability. Mail Order and RETAIL SHOP. Trade and Export inquiries welcome, Government and Educational Establishments' OFFICIAL ORDERS Accepted. Shop Hours: 9.00am to 6.00pm, Monday to Saturday. Thursdays 9am to 8pm. (Free Customer's Car Park). VAT: UK customers please add 15% VAT to cost incl. Carriage. CARRIAGE: Unless stated otherwise, minimum £2 on all orders. £3 on Larger items. On bulkier items, £7 Securicor charge applies (UK mainland only). Overseas orders, carriage is charged at cost. Specifications of all products are given in good faith but are subject to change without notice. Some items vary in their availability. Please ring for latest delivery situation.

Now Available

Computer Concepts/Canon

HIGH RESOLUTION LASER PACKAGE

300 by 300, d.p.i. 300 by 600 or an incredible

600 by 600 HIGH RESOLUTION

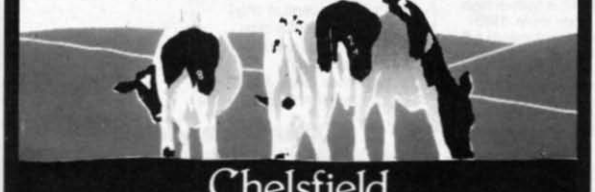
package consists of computer concepts Hi Res Expansion Board, Canon LPB4 four page a minute compact laser printer, software and cables.

Only	£1099.00
+ VAT	£164.85
+ Carriage	£9.00
Total	£1272.85

Additional toner/drum cartridges £69.00 each including VAT+Carriage. (A 4 Mbyte Archimedes is required for maximum resolution).

PHONE 0689 72127

Or send cheque payable to "CHELSFIELD PUBLICATIONS"
To: 2 Bucks Cross Cottages, Chelsfield Village,
Orpington, Kent, BR6 7RN



Chelsfield
Publications

The Electronic Font Foundry has a selection of almost 200 high quality fonts to choose from; most of them fully PostScript® compatible. They can be used with any program which makes use of the Outline Font Manager. We also sell DTP software and hardware, including the Canon BJ-130e ink jet printer. This has a resolution of 360 dpi and is capable of printing onto A2 paper.

For more information telephone or fax: *0344 872923*, or write to *The Electronic Font Foundry, 18 Brockenhurst Rd., Ascot. SL5 9DL*

MASTER COMPACT CARTRIDGE ADAPTOR

Connects MASTER and ELECTRON cartridges (including our ROMPlus-144) to the COMPACT – Price £25. SAE for details

INCREASE ELECTRON PERFORMANCE AND BBC COMPATIBLILITY WITH OUR RANGE OF ADD-ONS

E2P SECOND PROCESSOR

Gives the Electron equivalent performance to a BBC with a Second Processor. Adds a complete processor with its own 64k memory bank to run all programs while the Electron handles screen, keyboard, discs, etc.
Gives 30k memory for BASIC programs and 44k memory for HIBASIC programs. (Electron HIBASIC available separately) Gives up to 300% speed increase in programs.
Fits into a Plus One/ROMbox Plus slot.
Operating system available on ROM or 3.5" ADFS disc or Tape (state requirement)
Price £79 + £5 for case.

MODE 7 Mk2 UNIT

Gives exactly the same Mode 7 display screen as the BBC. Allows BBC Mode 7 software to run on the Electron: Magazine programs, Adventure games, Educational, Wordwise, Prestel, Teletext. Includes Prestel software – Prestel requires a modem and our RS423 adaptor. You will need a ROM socket to hold the Mode 7 ROM, eg. in our RS423 adaptor. For Mode 7 programs with HIMEM above &4000 you will need a Shadow RAM board. Fits inside the Electron, alongside the Shadow RAM Board.
Price £49 for you to fit, or £59 fitted.
Also available as a kit – board and ROM for £25 – you buy the components.

RS423 SERIAL CARTRIDGE

Connects the Electron to serial RS423/RS232 devices, eg. printers, modems. Allows the transfer of programs, data, etc. from one computer to another. Has the same socket, so uses the same leads as the BBC. Includes a socket for a 32k RAM or 16k ROM, eg. the Mode 7 ROM. Fits into a Plus One/ROMbox Plus slot.
Price £29.95 + £5 for a case + £20 for a 32k RAM.

ROMPLUS – 144 ROM CARTRIDGE

Sideways ROM cartridge with Printer Buffer and RAM Filing System. Holds 8 ROMs or 7 ROMs and a 32k RAM. Fits into a Plus One/ROMbox Plus slot.
Price £39 + £20 for a 32k RAM

All prices inclusive of post, etc. – Please allow 28 days delivery.

WE ALSO REPAIR ELECTRONS

JAFA SYSTEMS
9, Lon-y-Garwa, Caerphilly
Mid-Glamorgan CF8 1NL. Tel: 0222 887203

Now exchange programs, texts and other data immediately on floppy with Commodore users, share their printers and control any other device connecting to the serial port of the C64 home computer by your BBC Micro or compatible with our COMMATE ROM.

COMMODORE DFS +
PRINTER DRIVER +
DEVICE INTERFACE =

COMMATE ROM

Offers you a complete filing system to work with all Commodore drives apt for the C64 such as the 1541, dual drives and 1581 type and resembles closely the DFS filing system for sequential files on standard BBC drives. Additional commands are provided to transfer files from and to other BBC filing systems, to edit disks and to issue any Commodore disk command. Files written by Commodore computers are directly accessible to the BBC Micro and vice versa. Commodore printers for the C64 are tamed by the ROM'S separate printer driver that turns them into standard like ones and supports second address setting from within wordprocessors etc. Full access to the serial bus protocol is offered by 9 new OSBYTE calls allowing you to easily write drivers for any Commodore device (eg. the 1520 plotter) in any language. The ROM comes with a BufferBox connecting to the user port and accepts the serial bus cable from Commodore devices. A comprehensive manual describes all commands, OSBYTE and filing system calls, the printer driver and the serial bus protocol.

The ROM runs 6502 code and will operate from sideways RAM.

Together with over 30 star commands this is the ultimate ROM for interfacing your Beeb to Commodore peripherals!

Price **£49.95** excl. VAT

Please add £3 for postage and packing (£5 if outside Europe)
Government and educational orders welcome. Make cheques/postal orders payable to:

LIGHTHOUSE SOFTWARE
P.O. BOX 3822
7500 DV ENSCHEDE
HOLLAND

Please allow 28 days for delivery.
Commodore is a trademark of Commodore Business Machines Inc.

Creditcard users: Quote name number and expiry date

DIAMOND-PUBLIC DOMAIN

FOR THE ARCHIMEDES
100-PLUS DISCS AVAILABLE

Most of Diamond P.D. discs are at least 90% full, not like some P.D. libraries! If you want quality as well as quantity then Diamond P.D. is where it's at.
We have SoundTracker, Pictures, Graphics, Sprites for use in any D.T.P. package, Drawfiles, Utilities, Games, Desk-Top applications, Demo discs. All our picture discs are in GIF or IFF format, this enables us to get more on each disc, most pictures are Digitised and in colour. To view GIF/IFF files all you need is !Translator, you can also change GIF/IFF files back to Sprites using !Translator. EXCLUSIVE to Diamond 'SUPER SONIX', the ultimate in sound. (Superb).

PROFITS: **Any and all profits that are made will be given to the A.T.C. centre in Ellesmere Port in Cheshire who cater for people suffering with Downs Syndrome and also the mentally handicapped.**

AUTHORS: **I wish to thank Hugo Fiennes, David Pilling, Emmet Spier, Nigel Gent, R.K. Lloyd, B. Summers, Steve Evans, Dave Tomlinson and everyone else, especially Gary (GARF) Forrest for all their help.**

SOFTWARE: **We are always looking for good P.D. Software. If you are an author and would like to have your work included on our discs, please write to the address below.**

PRICING STRUCTURE: **Each disc costs £2.00, if you order 5 then you get 1 free, this price also includes postage. For catalogue send a 9" by 4" SAE to:**

MIKE WITKISS,
DIAMOND PUBLIC DOMAIN,
86 MEADOWBANK, MOOR LANE,
HOLWAY, HOLYWELL, CLWYD CH8 7EF.

BACK TO SCHOOL

Your computer is the only teacher which YOU CONTROL!

Whatever your age, whatever your subject - let your computer help you learn.

Subjects include ...
French, German, Spanish, Italian, English
History, Geography, Science, General Knowledge, Football, First Aid, Sport, England, Scotland, Natural History, Junior **Spelling and Arithmetic**

Available for most popular home & business computers

Kosmos are specialist producers of Educational Software designed to help you enjoy learning from your computer. Our programs even allow you to add your own lesson material.

Write or telephone for a FREE 20-page BROCHURE of our Educational & Leisure software
Please state your computer type

Kosmos Software Ltd, FREEPOST (no stamp needed)
DUNSTABLE, Beds. LU5 6BR
Telephone 05255 3942 or 5406

KOSMOS SOFTWARE

contex

Archimedes is a trademark of Acorn Computers Ltd

BANK MANAGER *for disc systems only*
The most advanced and versatile personal bank account management program available for all BBC computers. Consistently acclaimed!
"data entry is a delight. . . professional. . . excellent product" –Micro User *April '86*
Enter cheques and receipts. Standing orders any frequency. Automatic date sequencing. Reconcile statements. Search, amend and delete. Unreconcile. Move forwards or backwards. Analyse expenditure. Forward cash flow forecast. Up to 36 simultaneous 'bank accounts' online, inter-account transfers, 9999 standing orders, 99 analysis categories. 12 actual and 12 budgets per category, over 4,000 postings on an 80tk disc. Reports to screen or printer. Graphics. Foreign currency support. Password. File recovery. Auto exec file. Field editing. Itemised look ahead. Programmable report writer.
Standard Bank Manager for the BBC B, B+ £17.50

BANK MANAGER MASTER *for disc systems only*
Includes all of the facilities of the Standard Bank Manager **plus** ADFS file system support, shadow screens, uses sideways RAM, 40 or 80 column screen reports. Improved graphics, m/c windows, function key support and onscreen labels, additional functions added to the already extensive report facilities.
Bank Manager Master for the MASTER and MASTER COMPACT £22.50

ARCHIMEDES BANK MANAGER
All facilities of Master version plus high speed "native' mode, wild card analysis enquiry, analysis code sort and other enhancements.
"Impressed, ideal, easy to use." –Micro User, *March '88*
Archimedes and A3000 Bank Manager £25.00

BANK MANAGER BUSINESS UTILITIES *for disc systems only*
For the 'professional' who also uses the BANK MANAGER to control the business accounts the BUSINESS UTILITIES add double entry trial balance and programmable spreadsheet analysis reports. Generated from cheque and cash transactions keyed into BANK MANAGER. Just pass the reports to your accountant! Available for all BANK MANAGER versions state which.
Bank Manager Business Utility Pack 1 £12.00

TYPING TUTOR
Quickly learn to touch type. Over 90 smoothly graded lessons graduate you from the basic home keys to complete keyboard mastery. Unique word scan line checking. Target WPM and percentage correct. Revise the targets or lessons as required. Audio key click for positive key depression. Establish a typing rhythm using the automatic metronone. Free format option. Disc version includes several enhancements e.g. on screen keyboard, exact mode, on screen parameters. Recommended.
Cassette £12.50, Disc for BBC B, B+, Master and Compact £12.50
Archimedes and A3000 £15.00

ALL PRICES FULLY INCLUSIVE FREE POSTAGE WITHIN UK
Enquiries and Credit card orders telephone 0234-838347
Please state: cassette, 3.5" disc, 5.25" 40tk disc, or 5.25" 80tk disc and computer type (B. Compact, Master or Archimedes).

CONTEX COMPUTING

(REF. MU)

15 WOODLANDS CLOSE, COPLE, BEDFORD MK44 3UE

WHO ELSE CAN OFFER YOU THESE PRICES?

DESKTOP PRO 286/12mHz	DESKTOP PRO 386SX/20mHz	DESKTOP PRO 386/25mHz
• 12mHz 80826 • 1Mb RAM • 1.44 or 1.2Mb FDD • 4x16 bit slots • 102 Enhanced Keyboard • 2 Serial, 1 Parallel Ports • Slimline Case • 14" Colour VGA Monitor • 40Mb Hard Disk Drive • 200w Power Supply	• 20mHz 80386 SX • 1Mb RAM • 1.44 or 1.2Mb FDD • 5 Expansion Slots • 102 Enhanced Keyboard • 2 Serial, 1 Parallel Ports • Compact Case • 14" Colour VGA Monitor • 40Mb Hard Disk Drive • 200w Power Supply	• 25mHz 80386 • 4Mb RAM • 32k Cache Memory • 1.44 or 1.2Mb FDD • 5 Expansion Slots • 102 Enhanced Keyboard • 2 Serial, 1 Parallel Ports • Compact Case • 14" Colour VGA Monitor • 40Mb Hard Disk Drive • 200w Power Supply
OUR PRICE £999	**OUR PRICE £1399**	**OUR PRICE £2254**

All ABBCO systems are designed and manufactured to a very high standard. This enables us to offer you the latest technology at the best price without compromising quality or performance.
- 1 year warranty on Parts and Labour
- Hotline support for all customers
- Nationwide maintenance service available
- Please call for detailed price list and specifications

BULK DISKS

3.5" DS/DD	34
3.5" DS/HD	78
5.25" DS/DD	20
5.25" DS/HD	43

These disks are high quality Japanese products. 100% certified error free. All above disks come with labels. Minimum order 30 units.

DUST COVERS

PC XT	£4.95
PC AT	£4.95
80 col Printer Covers	£2.95
132 col Printer Covers	£2.95

LOCKABLE STORAGE BOXES

3.5" 40 Capacity	£3.44
3.5" 80 Capacity	£4.30
5.25" 50 Capacity	£3.44
5.25" 100 Capacity	£4.30

All disk boxes contain dividers and 2 keys

Original Branded Ribbons

Star LC10	£3.50
Star LC10 Colour	£5.22
Citizen 120D	£3.05
Epson LX800	£3.48
Epson LX80	£3.68
Pana KXP 1124	£6.91
Pana KXP 1081	£6.91
Amstrad 9512	£2.70

If the ribbon you require is not listed please call

ACCESSORIES

Mouse Mat 6mm	£1.60
Mouse Pocket	£1.56
Universal Printer Stand	£6.05
Printer Trolley	£69.00
3.5" Disk Labels (1000)	£6.95
Exact A4 Cont. Paper	£20.00
11"x9.5" 1pt Plain Continuous Paper	£12.00
3.5" Posso Box	£15.95
5.25" Posso Box	£15.95

HOW TO ORDER

Cheque/PO Order to:-
ABBCO (Sussex) LTD
41a The Broadway
Hayward Heath
West Sussex
RH16 3AS
Tel: 0444 450521/450103

ALL ABOVE PRICES EXCLUDE VAT
Delivery charges as follows: Consumables – £3.25 p&p per order.
Hardware – Next day £12.50 per box. 3-5 working days £8.50 per box.
E&OE. All prices are subject to change without prior notice
Educational and Government orders welcomed

Diamond Computer Systems Ltd

Southampton (0703) 232777 - *Dorset* (0202) 716226 - *Bristol* (0272) 693545 - *Manchester* - (061) 257 3999
Eire (061) 376740 - *London* 081-597 8851 - *Midlands* (0926) 312155

We are an authorised Acorn Premier Dealer
Education & Health Authorities call for quantity discounts

Limited Educational Special Offer!

Acorn A3000 & Philips CM8833 MkII

£659

when supplied on an official schools order. Strictly 14 days credit

Acorn A3000 £499
8833 MkII £175

A3000 – £529
A3000 & Monitor – £699
A3000 & Learning Curve – £629
A3000 & Learning Curve 8833 MkII – £799
A3000 & Learning Curve – 2Mb ram & Philips 8833 MkII – £849

Call for prices on the Archimedes A400 range

Printers

Citizen Swift 24	£234
Philips NMS1432	£99
Canon Bubblejet	£438
Star LC10	£118
Star LC200 colour	£169
Star LC24/10	£188
Star XB24/10 colour	£364
Panasonic KXP1124	£194
HP Deskjet 500	£399
HP Paintjet	£699
Citizen 120D	£102
Epson LX-400	£121
Epson LX-850	£168
Epson LQ-550	£249

YOUR CHILD AND THE NATIONAL CURRICULUM

Learning Curve Colour Monitor £799

IMPRESSIONS £99

PIPEDREAM 3 £109

MONITORS

PHILIPS 8833 Mk II	DIAMOND MULTI-SYNC	DIAMOND MULTISYNC 3D
£189 only! genuine UK model	£295	£379

HIGH QUALITY 3.5" SONY BULK DISKS

	Inc VAT
10	£5.00
25	£12.00
50	£23.00
100	£45.00
200	£80.00
500	£190.00

Add £4.95 for 80 capacity disk box

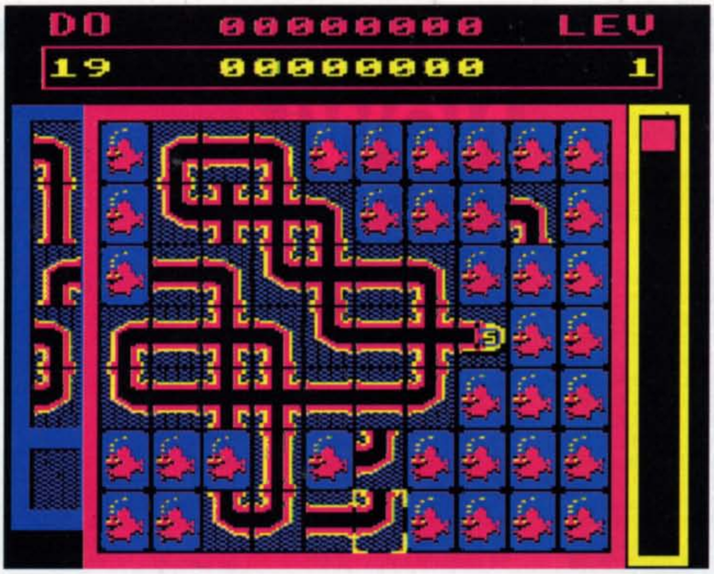
Call for details of our Software Club UP TO 30% DISCOUNT

How to order:

Call your local shop with your Access or Visa card or send a cheque/PO to the appropriate branch

Diamond Computer Systems Ltd: 84 Lodge Road, Southampton, SO2 2QS; 406 Ashley Road, Upper Parkstone, Poole Dorset; 227 Filton Avenue, Horefield, Bristol; 1022 Stockport Road, Levenshulme, Manchester; Ballina, Killaloe, County Clare, Eire; LAN Computer Systems Ltd, 1045 High Road, Chadwell Heath, Romford, Essex; LHC Microsales, 121 Regent Street, Leamington Spa, Warks.

ALL PRICES EXCLUDE VAT. COURIER £7.50. NEXT DAY SERVICE £10
E&OE. All prices correct at time of going to press and are subject to change without notice.



Delving the depths of tube mania, Mike Goldberg and his cat present a game with a large bore – but by no means boring

Plumb loonacy!

JUST like any self-respecting plumber, it looks like you're going to be too late to get those leaking pipes fixed before the main valve loses control. And each house you visit has a worse problem than the one before – more pipes to fix and less time to do it in.

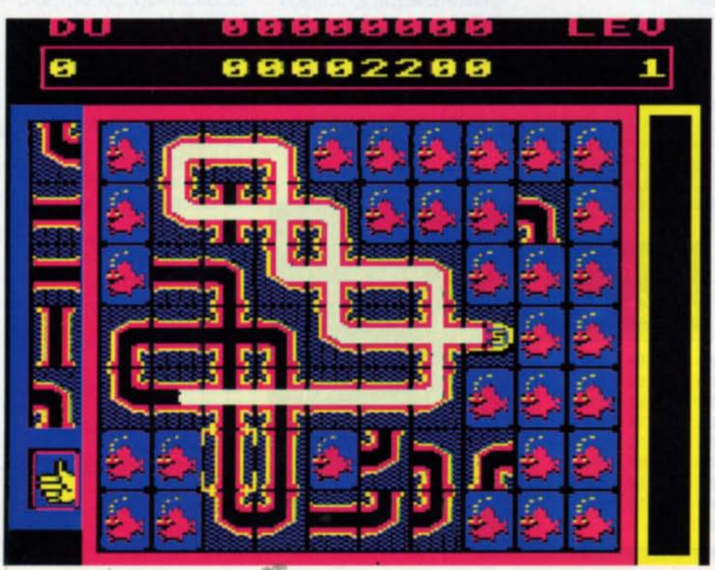
Can you finish connecting enough pipe before the inevitable surge of water courses through the plumbing and soaks everybody and everything? And can you do it before tea break?

This superb version of the popular game comes to you courtesy of no less than five listings. The first three create the machine code and data files so you'll need to type in and run them first. Use the checksums to ensure you've made no typing errors.

Finally enter Listing IV – Pipe – check it and save it, then do the same with Listing V, Loon. Now just CHAIN"Pipe" for loads of dripping fun.

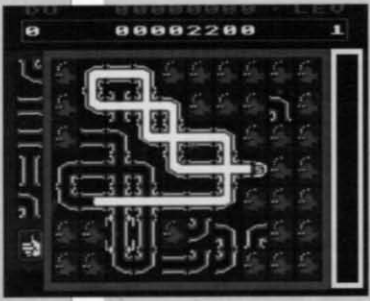
Oh yes, use the Z, X, / and : keys to move the cursor and Return to place a piece. You can lay one pipe over another, but it takes longer to position.

Keep your feet dry!



Listing I

```
 10 REM Pipe Loonacy - Code Generator
 20 REM by Mike Goldberg
 30 REM (c) The Micro User
 40 HIMEM=&5650:code=HIMEM
 50 DIM B%256
 60 FOR L%=0 TO 2 STEP 2
 70 P%=code
 80 [OPT L%
 90  JMP drawCursor
100  JMP drawGrid
110  JMP drawDraw
120 \
130 .drawCursor
140  LDA #4:STA &72
150  LDY #0
160 .loop1
170  LDX #32
180 .draw1
190  LDA (&70),Y:STA &80
200  LDA (&73),Y:EOR &80
210  STA (&70),Y
220  INY:DEX:BNE draw1
230 \
240  CLC
250  LDA &70:ADC #&20:STA &70
260  LDA &71:ADC #1:STA &71
270  DEC &72:BNE loop1:RTS
280 \
290 .drawGrid
300  LDA #10:STA &81
310  LDA #&A8:STA &74
320  LDA #&5F:STA &75
330 .init
340  LDA #7:STA &80
350 .again
360  LDA #3:STA &70
370  LDA &82:STA &77
380  LDA &83:STA &78
390 .loop2
```



```
  400  LDY #0:LDX #24
  410 .draw2
  420  LDA(&77),Y:STA(&74),Y
  430  INY:DEX:BNE draw2
  440 \
  450  CLC
  460  LDA &74:ADC #&40:STA &74
  470  LDA &75:ADC #1:STA &75
  480  CLC
  490  LDA &77:ADC #24:STA &77
  500  LDA &78:ADC #0:STA &78
  510  DEC &70:BNE loop2
  520  DEC &80:BNE again
  530  SEC
  540  LDA &74:SBC #&28:STA &74
  550  LDA &75:SBC #&1A:STA &75
  560  DEC &81:BNE init:RTS
  570 \
  580 .drawDraw
  590  LDY #0
  600 .loop3
  610  LDX #24
  620 .draw3
  630  LDA (&73),Y:STA (&70),Y
  640  INY:DEX:BNE draw3
  650  CLC
  660  LDA &70:ADC #&28:STA &70
  670  LDA &71:ADC #1:STA &71
  680  DEC &72:BNE loop3:RTS
  690 ]:NEXT
  700 $B%="SAVE PLcode "+STR$~code+" "+S
TR$~P%
  710 X%=B%MOD256:Y%=B%DIV256:CALL&FFF7
  720 END
```

Get it right ✓

```
 10 =    0 0    250 = 3F16 A    490 = B1A2 6
 20 =    0 0    260 = 12BB 4    500 = D110 5
 30 =    0 0    270 = 19E5 6    510 = 28F1 D
 40 = 2B89 9    280 =    0 6    520 = A638 3
 50 = 9F3E 5    290 = C67F 9    530 = 8D00 3
 60 = AAB9 7    300 = 5474 3    540 = 13C2 5
 70 = 3FB3 8    310 = E025 3    550 = 2B1A E
 80 = 1EF3 6    320 = 5A1C 8    560 = C29C 4
 90 = 4A4D 0    330 = 6272 C    570 =    0 4
100 = FCD3 7    340 = 4AD6 8    580 = F658 0
110 = CCF4 6    350 = 9E58 0    590 = 9CF1 0
120 =    0 6    360 = C607 A    600 = 1353 3
130 = D475 8    370 = 4EEB 3    610 =  9D1 8
140 = 57EE 3    380 = 5427 6    620 = B1C9 9
150 = 9CF1 B    390 =  372 7    630 = 4989 D
160 = 3311 B    400 = 980A 1    640 = 7BB5 5
170 = 5A26 F    410 = A1E8 D    650 = 74FB 9
180 = 918B C    420 = 34F2 C    660 = 16E9 9
190 = E989 D    430 = 6B94 A    670 = 12BB C
200 = 9860 9    440 =    0 A    680 = 5D66 C
210 = 7F58 2    450 = 74FB 1    690 = DA42 C
220 = 5BF7 B    460 = FCBA E    700 = C725 8
230 =    0 B    470 = D2ED 5    710 = 50E9 0
240 = 74FB E    480 = 74FB 1    720 = FD2E 7
```

Listing II

```
   10 REM Pipe Loonacy - Ikon Generator
   20 REM by Mike Goldberg
   30 REM (c) The Micro User
   40 HIMEM=&4E28:P%=HIMEM
   50 REPEAT READ a$
   60 IFa$>"!"!P%=EVAL("&"+a$):P%=P%+4
   70 UNTIL a$="!"
   80 PROCo("SAVE Ikons "+STR$~HIMEM+" "
+STR$~P%)
   90 END
  100 DEFPROCo($&700):LOCALX%,Y%
  110 Y%=7:CALL&FFF7:ENDPROC
  120 DATA34340300,35353434,F0F00F00
  130 DATAF2FBFDFC,E1E10E00,EDEDE9E1
  140 DATA3434343434,3434343434,F0FA7F2
  150 DATAA050A05,6969E5E0,69616961
  160 DATA3434343434,3343434,82850A05
  170 DATAFF0F0D2,E1E16961,EE1E1E1
  180 DATA37370300,37373737,FFFF0F00
  190 DATADCDCDCEE,EFEF0E00,676767EF
  200 DATA14263737,14142614,ED10DCDC
  210 DATAF0F000E0,E1C1A367,6161E1E1
  220 DATA37262626,3373737,10EDED00
  230 DATAFFF8860,E1E1E1A1,EEF23C1
  240 DATA77773300,77767777,FDFFFF00
  250 DATADFFFFFF7,FFFFEE00,FFFFFFFF
  260 DATA45677776,66444765,70F8F8F
  270 DATAF070B87,7FFFFFFF,1F3F1F5F
  280 DATA67664547,33777766,10F0F0F
  290 DATAFFFFFFEE,FFFF551B,EEFFFFFF
  300 DATA76773300,77777676,F3F3FF00
  310 DATAC7E7EEFF,FFFFEE00,FF111199
  320 DATA77767576,75647677,CFCFCFCF
  330 DATAED21C3CF,FFFFFFFF,FFFFFFFF
  340 DATA47474756,33776767,1F0EDFC3
  350 DATAFFFF3B1D,FFFFFFFF,EEFFFFFF
  360 DATA76773300,77777577,EFFFFF00
  370 DATAF1DB8ECF,7FFFEE00,FFFBBF37
  380 DATA76766677,76767676,8040F0F0
  390 DATAD0F0F0C0,1191F7FF,77F3F391
```

SUBSCRIBE NOW!

If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User*.

```
  400 DATA77777777,33777777,FCF8ED00
  410 DATAFFFFFEFC,FFF777F7,EEFFF3F5
  420 DATA77773300,77777777,FFFFFF00
  430 DATADEEFEFFF,FFFFEE00,FBFDFD0F
  440 DATA77777777,77777777,FABCBDDE
  450 DATAFAF9FDF8,FBF7F7FB,F7F7F3FB
  460 DATA74746476,33767474,313131F2
  470 DATAFFF3B131,FFFFFFFF,EEFFFFFF
  480 DATA77773300,77777777,CFEFFF00
  490 DATAF8F8FCF,1F3FEE00,7FFFFF5F
  500 DATA37473747,67373747,F8F0F8F
  510 DATA70A878F,6F9F6F9F,376FE79F
  520 DATA47474767,33455746,7FFFAABD
  530 DATAFFFF777F,1F9F9FBF,EE9D571B
  540 DATA77773300,77777777,C9CEFE00
  550 DATADBBDDBAC,B7FFEE00,FFFFFF33
  560 DATA47677777,47475757,CB2D5BBD
  570 DATAFEFFFFFD,7FFFFFFF,1B3F7F7F
  580 DATA56564756,33664547,F0F0F0F
  590 DATAFF0E0F0F,3B1D5F5F,EEFF777F
  600 DATA77773300,75733676,7EFFFF00
  610 DATAF5F5FDFD,DF7FEE00,F5E7FBFB
  620 DATA76753776,37757634,F0A0F0F8
  630 DATAD0A070F0,F3F5E7FB,E7F573E1
  640 DATA76377576,33775776,FDF5F5F8
  650 DATAFF7BFBFD,EBF6F5FB,EEFF7FFB
  660 DATA77773300,77777777,DFFFFF00
  670 DATACC8F0F4F,7FFFEE00,3F1F5F7F
  680 DATA77777674,77777476,80809088
  690 DATAE8E8C80,11333333,11111111
  700 DATA77777777,33777777,CCCCCF4F
  710 DATAFF008888,11111111,EE111111
  720 DATA47235500,55225523,FA85500
  730 DATA878F058A,1FAE5500,D5AA55AE
  740 DATA45235432,45234523,7880070F
  750 DATAAF8F0F0F,1DA6516A,9DAE1D2E
  760 DATA45234523,55225532,A55AFAF
  770 DATA55F8870F,1D269DAE,55AAD56A
  780 DATA55225500,7345122,55AA5500
  790 DATAFF055AA,55AA5500,FE154AA
  800 DATA15040407,7040415,FFCC440F
  810 DATAF44CCFF,DD11110F,F11110D
  820 DATA55623407,55225522,55AAF00F
  830 DATA55AA55AA,55BAE10F,55AA55AA
  840 DATA55225500,7345122,55AA5500
  850 DATAFF055AA,55AA5500,FE154AA
  860 DATA55444407,7444455,FF11110F
  870 DATAF1111FF,CDB9010F,F0189CD
  880 DATA55623407,55225522,55AAF00F
  890 DATA55AA55AA,55BAE10F,55AA55AA
  900 DATA54216500,54325432,5D087F00
  910 DATA2A5D082A,592C3D00,596A596A
  920 DATA54325432,54325432,2A7F5D08
  930 DATA7F7F5D08,596A596A,596A596A
  940 DATA54325432,65215432,5D080B2A
  950 DATAF2F7F7F,596A596A,3D2C596A
  960 DATA54216500,54325432,7F2F0F00
  970 DATA8085D7F,592C3D00,596A596A
  980 DATA54325432,54325432,5D7F7F2A
  990 DATA5D7F2A08,596A596A,596A596A
 1000 DATA54325432,65215432,85D2A08
 1010 DATA7F085D2A,596A596A,3D2C596A
 1020 DATA45235500,24025712,A5A55500
 1030 DATAFF,95A65500,211357CA,6,2400000
0
 1040 DATA0,0,3,21000000,57200206,552345
12
```

Listing III

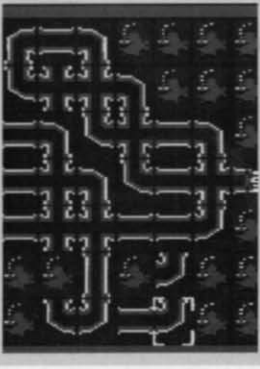
```
   10 REM Pipe Loonacy - Cursor Gen
   20 REM by Mike Goldberg
   30 REM (c) The Micro User
   40 HIMEM=&5700:P%=HIMEM
   50 REPEAT READ a$
   60 IFa$>"!"!P%=EVAL("&"+a$):P%=P%+4
   70 UNTIL a$="!"
   80 PROCo("SAVE Curmem "+STR$~HIMEM+"
"+STR$~P%)
   90 END
  100 DEFPROCo($&700):LOCALX%,Y%
  110 Y%=7:CALL&FFF7:ENDPROC
  120 DATA8080C0F0,808080,0,0,1070
  130 DATA0,8080808,808080,0,0,0,0
  140 DATA0,0,0,0,8080800,C0808080
  150 DATA0,0,0,10000000,8080800
  160 DATA80808080,F0,0,0,0,70,0,80
  170 DATA0,!
```

Get it right ✓

```
 10 =    0 0    100 = 95C1 F
 20 =    0 0    110 = 50E0 6
 30 =    0 0    120 = E93B 5
 40 = 3D0E E    130 = 3EA8 1
 50 =  4A3 4    140 = 1AD4 F
 60 = C929 0    150 = D3F6 4
 70 = 222B F    160 = 9352 C
 80 = E1B3 3    170 = 555C A
 90 = FD2E 6
```

Listing IV

```
   10 REM Pipe Loonacy - Pipe
   20 REM by Mike Goldberg
   30 REM (c) The Micro User
   40 ENVELOPE1,1,1,0,0,1,0,0,126,-1,-5,
-5,100,50:ENVELOPE2,1,-1,0,0,200,0,0,126
,-1,-1,-1,0,0
   50 ENVELOPE3,140,8,16,12,1,1,1,126,-1
,-4,-6,120,2
   60 ENVELOPE4,140,8,16,0,1,1,1,126,-1,
-4,-6,120,2
   70 ENVELOPE5,1,90,90,90,40,40,40,126,
-1,-3,-4,120,20
   80 ENVELOPE6,8,8,-8,16,1,1,1,126,-5,-
8,-8,120,20
```

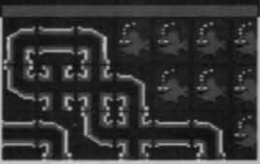


```
   90 ENVELOPE7,1,1,-1,4,1,1,1,200,-1,-1
,-1,120,100
  100 ENVELOPE8,132,-2,-1,2,1,6,1,126,-1
,-6,-8,120,20
  110 ENVELOPE9,1,4,4,2,1,1,1,126,-1,-1,
-1,126,126
  120 ENVELOPE10,5,0,1,0,0,200,5,12,-1,-
1,-2,120,100
  130 VDU23,224,224,224,224,224,224,224,
0,0,23,225,-1;-1;-1;-1;23,226,254,0,0,0,
0,0,0,0,23,227,128,128,128,128,128,128,1
28,128,23,228,128,128,128,128,128,128,12
8,0,23,229,64,64,224,224,64,64,0,0
  140 *LOAD PLCode 5650
  150 *LOAD CURMEM 5700
  160 *LOAD IKONS 4E28
  170 MODE5:VDU23;8202;0;0;0;19,3,4;0;
  180 PROClayout
  190 PAGE=&1100:CHAIN"LOON"
  200 DEFPROClayout
  210 GCOL0,1:MOVE56,944
  220 PLOT1,1160,0:PLOT1,0,-64:PLOT1,-11
60,0:PLOT1,0,64
  230 VDU24,1160;136;1264;852;
  240 GCOL0,130:CLG
  250 VDU24,1176;152;1248;836;
  260 GCOL0,128:CLG
  270 VDU24,136;132;1144;852;
  280 GCOL0,129:CLG
  290 VDU24,160;156;1120;828;
  300 GCOL0,128:CLG
  310 VDU24,0;192;128;852;
  320 GCOL0,131:CLG
```

```
1050 DATA0,55A5A5FF,57311303,55A695DB
1060 DATA45237600,24240612,8088000
1070 DATA88,1D2EF300,212103CA,24240606
1080 DATA24240606,0,0,21210303,21210303
1090 DATA6240606,76234512,0,80080888
1100 DATA3210303,F32E1DCA,54307400
1110 DATA54325432,8080800,8080808
1120 DATA59687900,596A596A,54325432
1130 DATA46215432,8080808,D828587
1140 DATA596A596A,1BA4D1E2,74307421
1150 DATA55327430,F8C8F882,F0F7F898
1160 DATAF9E8F9A4,D5E2F9E8,55225500
1170 DATA54225522,55AA5500,C2A955AA
1180 DATA55AA5500,FE154AA,72727130
1190 DATA71726272,3E3EFC2,CEE363C3
1200 DATAF,F000000,44001030,55225522
1210 DATAE1C2,55AA55AA,10E10F,55AA55AA
1220 DATA74325500,74307430,F8F7F000
1230 DATAF898F8C8,F9E2D500,F9E8F9E8
1240 DATA65026520,54325432,F0D82F7
1250 DATA8080808,3D0AB5A0,596A596A
1260 DATA54325432,74325432,8080808
1270 DATA8080808,596A596A,796A596A
1280 DATA55225500,7345122,55AA5500
1290 DATA1AA455AA,55AA5500,D1AA55AA
1300 DATA7,7000000,1636371A,1B362616
1310 DATA32F2FCE0,ECF272F2,403407
1320 DATA55225522,B41A,55AA55AA,1100C0E
0
1330 DATA55AA55AA,55225500,55225522
1340 DATA55AA5500,55AA55AA,55AA5500
1350 DATA55AA55AA,55225522,55225522
1360 DATA55AA55AA,55AA55AA,55AA55AA
1370 DATA55AA55AA,55225522,55225522
1380 DATA55AA55AA,55AA55AA,55AA55AA
1390 DATA55AA55AA,55225500,55225522
1400 DATA55AA5500,65BA55AA,55AA5500
1410 DATAFE154AA,54325522,54325432
1420 DATA80C86CB,8080808,F,7000000
1430 DATA54325432,65215432,8080808
1440 DATA8080808,597A690F,3D2C596A
1450 DATA55225500,7345122,55AA5500
1460 DATA2CE255AA,55AA5500,55AA55AA
1470 DATA7,7000000,1031E,0,596AD5AA
1480 DATA596A596A,54723407,65215432
1490 DATA8080808,8080808,596A596A
1500 DATA3D2C596A,54216500,7255032
1510 DATA8080800,8080808,592C3D00
1520 DATA596A596A,7,7000000,0,3D160301
1530 DATA596A596A,55AAD56A,55623407
1540 DATA55225522,55AAD56A,55AA55AA
1550 DATA55AA55AA,55AA55AA,54216500
1560 DATA54325432,8080800,8080808
1570 DATA592C3D00,F2D586A,54325432
1580 DATA55225532,8080808,65CB860C
1590 DATA7,F000000,55225522,55225522
1600 DATA55AA55BA,55AA55AA,55BAE10F
1610 DATA55AA55AA,54216500,54325432
1620 DATA8080800,8080808,592C3D00
1630 DATA596A596A,54325432,54325432
1640 DATA8080808,8080808,596A596A
1650 DATA596A596A,54325432,65215432
1660 DATA8080808,8080808,596A596A
1670 DATA3D2C596A,55225500,7345122
1680 DATA55AA5500,FF055AA,55AA5500
1690 DATAFE154AA,7,7000000,F,F000000
1700 DATAF,F000000,55623407,55225522
1710 DATA55AAF00F,55AA55AA,55BAE10F
1720 DATA55AA55AA,54216500,7345032
1730 DATA8080800,8080808,592C3D00
1740 DATAF69586A,7,7000000,8,8000000
1750 DATAF,F000000,54723407,65215432
1760 DATA8080808,8080808,597A690F
1770 DATA3D2C596A,!
```

Get it right ✓

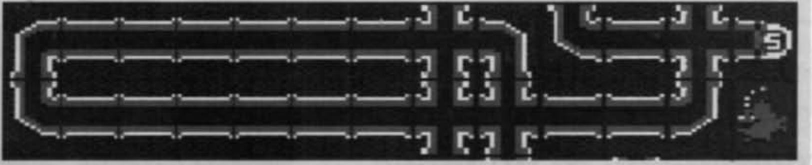
```
 10 =    0 0 | 190 = 69DE C | 370 = 811D A | 550 = FCD6 6 | 730 = D9BF B |  910 =  86D 4 | 1090 = 7CB5 7 | 1270 = ECBC D | 1450 = E3C4 1 | 1630 = DAFA 8
 20 =    0 0 | 200 = A828 9 | 380 = 543A B | 560 = 5E7F 6 | 740 = CFFF A |  920 = B834 6 | 1100 = 7FC6 2 | 1280 = E3C4 5 | 1460 = 2ABB 3 | 1640 = F061 6
 30 =    0 0 | 210 = B0C9 E | 390 = 22AF D | 570 = 4492 5 | 750 = CFA5 7 |  930 = 25E5 E | 1110 = 2340 4 | 1290 = E15F 5 | 1470 = 1A16 D | 1650 =  19C 2
 40 = 8426 6 | 220 = A190 0 | 400 = F335 1 | 580 = D84D 6 | 760 = 54B9 D |  940 = 3E49 A | 1120 = 1C4E F | 1300 = C65C 1 | 1480 = AFCF 9 | 1660 = F061 9
 50 =  4A3 3 | 230 = C7E1 9 | 410 = 7CE2 F | 590 = 9D8D 8 | 770 = 706F 1 |  950 = 5246 B | 1130 = D67B 5 | 1310 = 2064 5 | 1490 = F061 C | 1670 = 4187 E
 60 = C929 C | 240 = C771 4 | 420 = DCF3 5 | 600 = 27FF 1 | 780 = E3C4 D |  960 = F0A8 1 | 1140 = 4A61 6 | 1320 = 92FD 5 | 1500 = CEB1 F | 1680 = B9DE F
 70 = 222B 1 | 250 = DAA7 1 | 430 = 39DD A | 610 = B6FA D | 790 = 33FB 6 |  970 = C668 F | 1150 =  C14 9 | 1330 = FF29 4 | 1510 = 3AFC 8 | 1690 = 121F 6
 80 = 9575 E | 260 = 2D95 D | 440 = DC83 D | 620 = 7A1D C | 800 = 593F 8 |  980 =  C5F 0 | 1160 = 5221 7 | 1340 = 8F0F 3 | 1520 = D1AE 4 | 1700 = 47B6 A
 90 = FD2E C | 270 = F092 6 | 450 = 9CE1 B | 630 = F1DA 1 | 810 = 9B3E B |  990 = 450A A | 1170 =  BE9 7 | 1350 = 8110 8 | 1530 = 22E1 E | 1710 = B20C 5
100 = 95C1 2 | 280 = F865 1 | 460 = 2614 0 | 640 = 45A4 F | 820 = 1061 F | 1000 = FF65 3 | 1180 = EBDF A | 1360 = A076 1 | 1540 = 1D2A 0 | 1720 = 6F54 E
110 = 50E0 B | 290 = DD14 3 | 470 = EFB3 9 | 650 = D143 1 | 830 = 50AA 9 | 1010 = 7FD8 2 | 1190 = 87CB 2 | 1370 = 8110 1 | 1550 = 40EF 6 | 1730 = 3AFC D
120 = 5810 0 | 300 = 3660 A | 480 = 5AAD A | 660 = 5355 E | 840 = E3C4 5 | 1020 = 78B5 9 | 1200 = 3CCB 0 | 1380 = A076 B | 1560 = 2340 3 | 1740 = 3E33 3
130 = 557F 3 | 310 = BDC8 7 | 490 = 2E7B 2 | 670 = A074 2 | 850 = 33FB 2 | 1030 = D3BC 6 | 1210 = C4D6 D | 1390 = FF29 F | 1570 = 6EB0 B | 1750 = 63C8 9
140 = 3F53 E | 320 = 3A34 7 | 500 = 115A 4 | 680 = 89D4 4 | 860 = B34C 6 | 1040 = A5C7 9 | 1220 = AFEF 2 | 1400 = 5D0C 4 | 1580 =  2D2 B | 1760 = F45C 1
150 = F989 3 | 330 = 2A2D D | 510 = 273D D | 690 = D2B3 6 | 870 = 8EC9 A | 1050 = 6313 7 | 1230 = BB7A 4 | 1410 = 1E34 6 | 1590 = E459 8 | 1770 = E6C7 4
160 = BFDE 0 | 340 = 17D7 5 | 520 = 4F4F D | 700 = 52CA 1 | 880 = 1061 3 | 1060 = 1AA6 3 | 1240 = 610D C | 1420 = 3254 B | 1600 = E579 B
170 =  FC1 4 | 350 = 6A50 F | 530 = AADB 2 | 710 = 6B88 4 | 890 = 50AA 5 | 1070 = ACAD 7 | 1250 = 98EB B | 1430 = 8138 7 | 1610 = ECCB 5
180 = CE6D C | 360 = 57D8 9 | 540 = 6E46 A | 720 = 90A4 5 | 900 = 17AE E | 1080 = 66C7 7 | 1260 = 3324 4 | 1440 = 43CF 0 | 1620 = 3AFC 8
```



```
330 VDU28,0,20,1,6
340 COLOUR131:CLS
350 ENDPROC
```

Get it right ✓

```
 10 =    0 0 | 190 = 8A9B 0
 20 =    0 0 | 200 =  76B B
 30 =    0 0 | 210 = 806A B
 40 = E965 5 | 220 = FCF9 F
 50 = 9B06 1 | 230 = D1C9 6
 60 = 37EF C | 240 = C3D2 5
 70 = D36D 6 | 250 = ED9B 7
 80 = 5842 A | 260 = 1CC7 F
 90 = 33BB 5 | 270 = 5CCE 9
100 = 8085 5 | 280 = 2BF7 3
110 = E7C2 B | 290 = 35F5 E
120 = 5082 B | 300 = 1CC7 C
130 = B78B 8 | 310 = 4EB5 2
140 = 7CF1 F | 320 = F4E2 3
150 = 8AA5 E | 330 = EDFE 4
160 = EAAD 2 | 340 = 2149 D
170 = 2A3E 0 | 350 = ED0F 2
180 = 67EA 8
```



Listing V

```
  10 REM Pipe Loonacy - Loon
  20 REM by Mike Goldberg
  30 REM (c) The Micro User
  40 DIMvc%(3),bof%(3),box%(70),m%(12),
X%(12,26),Y%(12,26),osx%(3),osy%(3),W%(4
),num%(3),x%(3,20),y%(3,20),v%(3,20),w%(
3,20)
  50 bof%(0)=-10:bof%(1)=1:bof%(2)=10:b
of%(3)=-1:vc%(0)=134:vc%(1)=431:vc%(2)=3
65:vc%(3)=521
  60 FORJ%=1TO12
  70 READm%(J%)
  80 FORI%=1TOm%(J%)
  90 READX%(J%,I%)
 100 READY%(J%,I%)
 110 NEXT
 120 NEXT
 130 DATA24,0,4,0,4,0,4,0,4,0,4,0,4,0,4
,0,4,0,4,0,4,0,4,0,4,0,4,0,4,0,4,0,4,0,4
,0,4,0,4,0,4,0,4,0,4,0,4,0,4
 140 DATA18,0,4,0,4,0,4,0,4,0,4,0,4,0,4
,0,4,0,4,0,4,0,4,0,4,0,4,8,4,8,4,8,0,8,0
,8,0
 150 DATA18,0,4,0,4,0,4,0,4,0,4,0,4,0,4
,0,4,0,4,0,4,0,4,0,4,0,4,-8,4,-8,4,-8,0,
-8,0,-8,0
 160 DATA12,8,0,8,0,8,0,8,0,8,0,8,0,8,0
,8,0,8,0,8,0,8,0,8,0
 170 DATA13,8,0,8,0,8,0,8,0,8,4,8,4,8,4
,0,4,0,4,0,4,0,4,0,4,0,4
 180 DATA15,8,0,8,0,8,0,8,0,8,0,8,-4,8,
-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,
-4
 190 DATA24,0,-4,0,-4,0,-4,0,-4,0,-4,0,
-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,
-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,
-4,0,-4,0,-4
 200 DATA17,0,-4,0,-4,0,-4,0,-4,0,-4,0,
-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,8,-4,8,
-4,8,0,8,0,8,0
 210 DATA17,0,-4,0,-4,0,-4,0,-4,0,-4,0,
-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,-8,-4,-
8,-4,-8,0,-8,0,-8,0
 220 DATA12,-8,0,-8,0,-8,0,-8,0,-8,0,-8
,0,-8,0,-8,0,-8,0,-8,0,-8,0,-8,0
 230 DATA13,-8,0,-8,0,-8,0,-8,0,-8,4,-8
,4,-8,4,0,4,0,4,0,4,0,4,0,4,0,4
 240 DATA15,-8,0,-8,0,-8,0,-8,0,-8,0,-8
,-4,-8,-4,0,-4,0,-4,0,-4,0,-4,0,-4,0,-4,
0,-4,0,-4
 250 FORI%=0TO3:READosx%(I%),osy%(I%):N
EXT
 260 DATA40,-52,56,-40,40,-48,40,-40
 270 FORJ%=0TO3
 280 READnum%(J%)
 290 FORI%=1TOnum%(J%)
 300 READx%(J%,I%),y%(J%,I%),v%(J%,I%),
w%(J%,I%)
 310 NEXT:NEXT
 320 DATA12,0,4,16,0,0,4,-16,0,0,4,16,0
,0,4,-16,0,0,4,16,0,0,4,-16,0,0,4,16,0,0
,4,-16,0,0,4,16,0,0,4,-16,0,0,4,16,0,0,4
,-16,0
 330 DATA5,8,0,0,-20,8,0,0,20,8,0,0,-20
,8,0,0,20,8,0,0,-20
 340 DATA13,0,-4,16,0,0,-4,-16,0,0,-4,1
6,0,0,-4,-16,0,0,-4,16,0,0,-4,-16,0,0,-4
,16,0,0,-4,-16,0,0,-4,16,0,0,-4,-16,0,0,
-4,16,0,0,-4,-16,0,0,-4,16,0
 350 DATA5,-8,0,0,-20,-8,0,0,20,-8,0,0,
-20,-8,0,0,20,-8,0,0,-20
 360 VDU26,4:COLOUR128:COLOUR2:PRINTTAB
(6,3)"00000000":COLOUR1:PRINTTAB(1,1)"DO
   00000000  LEV"
```

Turn to Page 122

42M Removable Hard Drives

If you are looking for a hard drive for your Archimedes or A3000 why not consider using a MicroNet MR45 removable hard drive ?…

- **Fast** – The average access time is 25 milliseconds, so these are FAST devices. When used with an Oak SCSI card, the file transfer rate is the same as a conventional fixed hard disc.
- **Reliable** – The technology of these drives has been proven by use in huge quantities on the Apple Macintosh computers.
- **Robust** – The discs, when not in the drive, are extremely robust. We (deliberately!) threw one half-way across the office, it dropped on the floor and rolled over a couple of times. We then verified it and found that it did not have a single error on it!
- **Flexible** – The medium is removable, so you can use different discs for different applications.
- **Secure** – The medium is removable, so you can take out the disc and lock it up in a safe place.
- **Cheap** – The price of the drive, including a single 42M disc, is just £680 (including VAT and carriage). Extra 42M discs are £80 each.

*N.B. These are special prices for **Archive Magazine subscribers only** (ring for details) but it's worth paying £17 to join Archive just to buy one of these drives!*

Norwich Computer Services

96a Vauxhall Street, Norwich NR2 2SD. (0603–507057 / Fax 250095)

The economical and practical design of the City Desk Workstation removes the systems hardware from the desk surface providing optimum use of available space. Its many design features are suited to home or office use.

At £139.50* it pays to put technology in its place

Compatible with the majority of PC Systems currently available its many assets include a steel cantilever frame – full cable management – heavy duty lockable castors – heat/stain/scratch resistant working surfaces available in either cream or grey – a full depth drawer unit which can be assembled for left or right hand use and with overall dimensions of H35" W47" D29" it can negotiate a standard 30" doorway with ease.

Free delivery in mainland UK and a 12 month guarantee completes an altogether unbeatable offer.

To order simply complete and send the coupon or telephone for further details.

* Plus VAT

CITY DESK
EUROPE LIMITED

24 – 26 Queens Road Reading Berkshire RG1 4AU.
Tel: 0734 594145. Fax: 0734 589954.

City Desk Europe Ltd 24 – 26 Queens Road Reading Berkshire RG1 4AU.
I wish to order ☐ workstation(s) in Cream ☐ /Grey ☐
at £160.43 each (inc VAT). I enclose my cheque for £________
or charge my Access ☐ /Visa ☐ No: Expiry date________
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
Signature________
Name________
Address________
Postcode________ Tel No: ________
MU4

THE 1990 ATARI ST PRODUCT GUIDE

PERIPHERALS & ACCESSORIES

FLOPPY DISK DRIVES

MONITORS

JOYSTICKS

SCANNERS

PRINTERS

DISK BOXES

ROBOTICS

PLUS MUCH MORE!
SEND FOR YOUR FREE PRODUCT GUIDE!

THE UK's No 1 GUIDE TO THE ATARI ST

AND ITS FREE!

If you are interested in buying an Atari ST (or if you already own one), then you will not want to miss the FREE Atari ST Product Guide from Silica Shop. This 48 page, full colour guide is packed with details of peripherals, accessories, books and software for the Atari ST range of computers. In fact, the 1990 Atari ST Product Guide is the most comprehensive product handbook available for the Atari ST. Not only does the Product Guide provide an invaluable source of information on the UK's largest range of ST products, it is available absolutely FREE OF CHARGE! Just complete and return the coupon below for your FREE COPY! In addition to ALL Atari hardware, the range of products featured in the catalogue includes:

PERIPHERALS:

Robotics
Hard Disk Drives
MIDI/Music
Monitors
Printers
Sound Digitisers
Clocks
Emulators
Modems
Mouse controllers
Scanners
Sound Samplers
Floppy Disk Drives
Graphic Tablets
Modulators
Plotters
Scientific Equip
Video Enhancers

ACCESSORIES:

Cables
Disk Boxes
Monitor Access
Printer Labels
Stands
Cleaning Kits
Dust Covers
Mouse Access
Printer Paper
Upgrades
Disks
Joysticks
Power Supplies
Printer Ribbons

BOOKS:

ST Dedicated
68000 Processor
General Computing

SOFTWARE - ENTERTAINMENT:

Arcade Games
Sport Sims
Compilations
Adventures
Advanced Sims
Board & Strategy

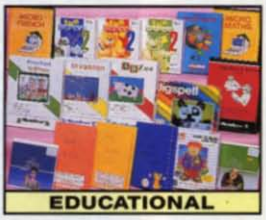
SOFTWARE - PRODUCTIVITY:

Art & Graphics
Communications
Education/Childs
Spreadsheets
Accounts
Databases
Music
Utilities
CAD
Desktop Publishing
Programming
Word Processors

SOFTWARE & BOOKS

ARCADE GAMES

ART & GRAPHICS



EDUCATIONAL

MUSIC

BOOKS

& STILL MORE!
RETURN THE COUPON NOW!

COMPLETE & RETURN THE COUPON FOR YOUR FREE COPY ▶ OF THE 1990 ATARI ST 48 PAGE PRODUCT GUIDE

FROM SILICA SHOP - THE ATARI SPECIALISTS

Silica are the UK's No 1 Atari Specialists. We have been established for over 12 years, and have an annual turnover of £10 million. With our experience and expertise, we can claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon for our latest free literature and begin to experience the "Silica Service".

SILICA SHOP

MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-309 1111**
Order Lines Open: Mon-Sat 9.00am-6.00pm No Late Night Opening Fax No: 081-308 0608

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA **Tel: 071-580 4000**
Opening Hours: Mon-Sat 9.30am-6.00pm Late Night: Thursday until 8pm Fax No: 071-323 4737

LONDON SHOP: Selfridges (1st Floor), Oxford Street, London, W1A 1AB **Tel: 071-629 1234** x3914
Opening Hours: Mon-Sat 9.30am-6.00pm Late Night: Thursday until 8pm Fax No: 071-495 8321

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-302 8811**
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm Fax No: 081-309 0017

To: Silica Shop, Dept MUSER-12.90-37, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND ME A FREE ST PRODUCT GUIDE

Mr/Mrs/Ms: .... Initials: .... Surname: ....

Address: ....

....

....

Postcode: .... Tel: ....

Which computer(s), do you own? ....

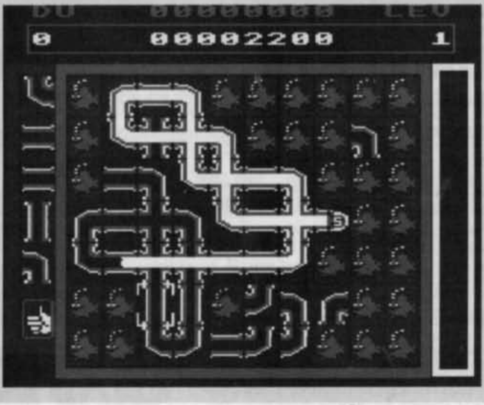
E&OE - Advertised prices and specifications may change - please return the coupon for the latest information.

From Page 119

```
  370 PROCinit
  380 REPEAT
  390 REPEAT
  400 PROCgrid
  410 PROCbox
  420 PROCtmp
  430 PROCstart
  440 REPEAT
  450 PROCkeys
  460 PROCtime
  470 UNTILW%=0
  480 PROCflow1
  490 REPEAT
  500 IFss%=0PROCkeys
  510 IFM%>0:IFk%<tk%k%=k%+1:PROCdraw
  520 IFk%=tk%PROCflow2:k%=0:tk%=m%(M%):
PROCscore(V%)
  530 IFss%>0PROCduo
  540 UNTILM%=0
  550 IFy%=156y%=828
  560 IFy%=848y%=176
  570 IFx%=1120x%=160
  580 IFx%=144x%=1104
  590 VDU5:GCOL0,2:MOVEx%,y%:PRINTW$:GCO
L0,1:MOVEx%,y%:PRINTE$
  600 COLOUR128
  610 IFt%=-1PROCwin
  620 IFM%=0PROClose
  630 IFp>3!&70=C%:!&73=K%:CALLE%
  640 VDU5:GCOL0,0:MOVEx%,y%:PRINTW$
  650 IFis%=1col%=1:GOSUB3520
  660 IFis%=2col%=1:GOSUB3530
  670 IFis%=3col%=1:GOSUB3520:GOSUB3530
  680 VDU26:GCOL0,0:MOVE164,156:PLOT1,0,
676:PLOT1,960,0:PLOT1,0,-676:PLOT1,-960,
0
  690 UNTILM%=0
  700 UNTIL0
  710 END
  720 DEFPROCinit
  730 R1%=12
  740 R2%=20
  750 R3%=18
  760 t%=19
  770 lev%=1
  780 ok%=&7388
  790 oldS%=0
  800 V%=100
  810 Bg%=&4EB8
  820 S%=0
  830 W$=CHR$224:B$=CHR$225:R$=CHR$226:R
2$=CHR$227+CHR$8+CHR$10+CHR$228:E$=CHR$2
29
  840 data%=3630
  850 HS%=0
  860 W1%=50
  870 B%=&5F88
  880 E%=&5650
  890 G%=E%+3
  900 D%=E%+6
  910 K%=&5700
  920 ikon%=&5410
  930 ob%=&50F8
  940 cc%=1
  950 VDU20,19,3,4;0;
  960 ENDPROC
  970 DEFPROCgrid
  980 !&82=Bg%
  990 CALLG%
 1000 ENDPROC
 1010 DEFPROCbox
 1020 FORI%=0TO4
 1030 R%=RND(7)*&48+ikon%
 1040 W%(I%)=R%
 1050 NEXT
 1060 P%=W%(0)
 1070 FORI%=4TO0STEP-1
 1080 !&70=B%:?&72=3:!&73=W%(I%):CALLD%
 1090 B%=B%+960
 1100 NEXT
 1110 ENDPROC
 1120 DEFPROCstart
 1130 B%=&5F88
 1140 C%=&5FA8
 1150 !&70=C%
 1160 !&73=K%
 1170 CALLE%
 1180 a%=0:b%=0
 1190 ton%=0
 1200 k%=0:tk%=0
 1210 ss%=0:wc%=0
 1220 COLOUR2:COLOUR128:VDU26,4,30:PRINT
TAB(1,3);t%
 1230 tt%=t%
 1240 IFlev%<10PRINTTAB(17,3);" ";lev% E
LSEPRINTTAB(17,3);lev%
 1250 VDU26,5
 1260 btx%=1184:bty%=180
 1270 VDU24,1184;192;1240;828;
 1280 GCOL0,129:CLG
 1290 !&70=ok%:?&72=3:!&73=&5410:CALLD%
 1300 res%=-1
 1310 dv%=10
 1320 p=5:M%=0
 1330 TIME=0
 1340 ENDPROC
 1350 DEFPROCkeys
 1360 IFINKEY-90REPEATUNTILINKEY-106
 1370 IFINKEY-98PROCmc(-1,0,-24)
 1380 IFINKEY-67PROCmc(1,0,24)
 1390 IFINKEY-73PROCmc(0,-1,-960)
 1400 IFINKEY-105PROCmc(0,1,960)
 1410 IFINKEY-74PROCfix:*FX21,0
 1420 REM
 1430 IFton%=2FORT=1TO12:NEXT
 1440 IFton%=0FORT=1TO80:NEXT
 1450 ENDPROC
 1460 DEFPROCmc(d%,e%,c%)
 1470 IFa%+d%<0ORa%+d%>9ENDPROC
 1480 IFb%+e%<0ORb%+e%>6ENDPROC
 1490 a%=a%+d%:b%=b%+e%
 1500 !&70=C%:!&73=K%:CALLE%
 1510 C%=C%+c%
 1520 !&70=C%:!&73=K%:CALLE%
 1530 ENDPROC
 1540 DEFPROCfix
 1550 bn%=a%+1+(b%*10)
 1560 IFbox%(bn%)=3SOUND1,9,190,1:ENDPRO
C
 1570 IFbox%(bn%)=2SOUND1,8,190,1:ENDPRO
C
 1580 IFC%=Xtap%:SOUND1,7,100,1:ENDPROC
 1590 !&70=C%:!&73=K%:CALLE%
 1600 IFbox%(bn%)=1ANDton%<1PROCslow
 1610 IFbox%(bn%)=1ANDton%=2ss%=1:ENDPRO
C
 1620 !&70=C%:?&72=3:!&73=P%:CALLD%
 1630 !&70=C%:!&73=K%:CALLE%
 1640 box%(bn%)=1
 1650 IFP%=ob%box%(bn%)=3
 1660 PROCscroll
 1670 ENDPROC
 1680 DEFPROCslow
 1690 !&70=C%:?&72=3:!&73=ikon%:CALLD%
 1700 FORI=1TO3
 1710 !&70=C%:?&72=I:!&73=P%:CALLD%
 1720 SOUND3,5,90,1
 1730 PROCtime
 1740 IFton%=0FORT=1TO400:NEXT
 1750 NEXT
 1760 ENDPROC
 1770 DEFPROCscroll
 1780 VDU28,0,20,1,6,4:COLOUR131
 1790 B%=&5F88
 1800 FORI%=0TO3
 1810 W%(I%)=W%(I%+1)
 1820 NEXT
 1830 P%=W%(0)
 1840 R%=RND(7)*&48+ikon%
 1850 IFlev%>8PROCothers
 1860 W%(4)=R%
 1870 COLOUR131
 1880 SOUND1,1,190,1
 1890 FORI%=2TO0STEP-1
 1900 VDU30,11
 1910 !&70=B%
 1920 ?&72=1
 1930 !&73=W%(4)+(I%*24)
 1940 CALLD%
 1950 NEXT
 1960 ENDPROC
 1970 DEFPROCwait(w%)
 1980 FORT=1TOw%:NEXT
 1990 ENDPROC
 2000 DEFPROCtap
 2010 FORI%=1TO70:box%(I%)=0:NEXT
 2020 WD%=RND(4)-1
 2030 RESTOREdata%
 2040 tuL%=-1:tuR%=-1:tuU%=-1:tuD%=-1
 2050 READW%,is%
 2060 IFis%>0PROCholes
 2070 Wtap%=&52F0+(WD%*&48)
 2080 f%=(RND(8)-1)*24
 2090 g%=(RND(5)-1)*960
 2100 sbn%=f%/24+2+(g%/960+1)*10
 2110 Xtap%=&6380+f%+g%
 2120 !&70=Xtap%:?&72=3:!&73=Wtap%
 2130 CALLD%
 2140 ENDPROC
 2150 DEFPROCflow1
 2160 SOUND2,6,190,1
 2170 ton%=1
 2180 VDU26
 2190 GCOL0,3
 2200 x%=f%/24*96+256+osx%(WD%)
 2210 y%=736-(g%/960*96)+osy%(WD%)
 2220 MOVEx%,y%
 2230 FORI%=1TOnum%(WD%)
 2240 PLOT0,x%(WD%,I%),y%(WD%,I%)
 2250 x%=x%+x%(WD%,I%):y%=y%+y%(WD%,I%)
 2260 PLOT1,v%(WD%,I%),w%(WD%,I%)
 2270 NEXT
 2280 IFWD%=1x%=x%-16
 2290 IFWD%=2y%=y%+20
 2300 PROCflow2
 2310 k%=0:tk%=m%(M%)
 2320 ENDPROC
 2330 DEFPROCflow2
 2340 M%=0:res%=-1:rmc%=-1
 2350 ton%=2
 2360 sbn%=sbn%+bof%(WD%):wb%=sbn%
 2370 IFss%>0ANDwb%=a%+1+(b%*10)ss%=0:M%
=0:ENDPROC
 2380 PROCtunnels
 2390 IFwb%>70ORwb%<1ENDPROC
 2400 box%(wb%)=2
 2410 VDU5:GCOL0,3
 2420 IFWD%=0PROC0:ENDPROC
 2430 IFWD%=1PROC1:ENDPROC
 2440 IFWD%=2PROC2:ENDPROC
 2450 IFWD%=3PROC3:ENDPROC
 2460 ENDPROC
 2470 DEFPROC0
 2480 IFPOINT(x%,y%+4)=3:IFPOINT(x%,y%+9
2)=1M%=1:WD%=0:ENDPROC
 2490 IFPOINT(x%,y%+4)>0ENDPROC
 2500 IFPOINT(x%-8,y%+20)=0res%=0:M%=1:W
D%=0:ENDPROC
 2510 IFPOINT(x%,y%+92)=0M%=1:WD%=0:ENDP
ROC
 2520 IFPOINT(x%+48,y%+44)=0M%=2:WD%=1:E
NDPROC
 2530 IFPOINT(x%-32,y%+44)=0M%=3:WD%=3:E
NDPROC
 2540 ENDPROC
 2550 DEFPROC1
 2560 IFPOINT(x%+24,y%)=3:IFPOINT(x%+104
,y%)=1M%=4:WD%=1:ENDPROC
 2570 IFPOINT(x%+24,y%)>0ENDPROC
 2580 IFPOINT(x%+40,y%+12)=0res%=1:M%=4:
WD%=1:ENDPROC
 2590 IFPOINT(x%+88,y%)=0M%=4:WD%=1:ENDP
ROC
 2600 IFPOINT(x%+56,y%+32)=0M%=5:WD%=0:E
NDPROC
 2610 IFPOINT(x%+56,y%-56)=0M%=6:WD%=2:E
NDPROC
 2620 ENDPROC
 2630 DEFPROC2
 2640 IFPOINT(x%,y%-24)=3:IFPOINT(x%,y%-
112)=1M%=7:WD%=2:ENDPROC
 2650 IFPOINT(x%,y%-24)>0ENDPROC
 2660 IFPOINT(x%-8,y%-40)=0res%=2:M%=7:W
D%=2:ENDPROC
 2670 IFPOINT(x%,y%-112)=0M%=7:WD%=2:END
PROC
 2680 IFPOINT(x%+48,y%-56)=0M%=8:WD%=1:E
NDPROC
 2690 IFPOINT(x%-32,y%-56)=0M%=9:WD%=3:E
NDPROC
 2700 ENDPROC
 2710 DEFPROC3
 2720 IFPOINT(x%-8,y%)=3:IFPOINT(x%-88,y
%)=1M%=10:WD%=3:ENDPROC
```

SUBSCRIBE
NOW!

If you prefer to save the wear and tear on your fingers you'll find this listing – together with all the others from this issue – on this month's disc, sent free if you subscribe to *The Micro User.*



```
 2730 IFPOINT(x%-8,y%)>0ENDPROC
 2740 IFPOINT(x%-24,y%+12)=0res%=3:M%=10
:WD%=3:ENDPROC
 2750 IFPOINT(x%-88,y%)=0M%=10:WD%=3:END
PROC
 2760 IFPOINT(x%-56,y%+32)=0M%=11:WD%=0:
ENDPROC
 2770 IFPOINT(x%-56,y%-56)=0M%=12:WD%=2:
ENDPROC
 2780 ENDPROC
 2790 DEFPROCdraw
 2800 VDU26,5:GCOL0,3
 2810 x%=x%+X%(M%,k%)
 2820 y%=y%+Y%(M%,k%)
 2830 MOVEx%,y%:PRINTW$
 2840 IFres%>-1PROCres(res%):ENDPROC
 2850 dv%=6
 2860 ENDPROC
 2870 DEFPROCtime
 2880 IFTIME<W%ENDPROC
 2890 bty%=bty%+4
 2900 VDU5:GCOL0,0
 2910 MOVEbtx%,bty%:PRINTB$
 2920 IFbty%=828W%=0
 2930 TIME=0
 2940 ENDPROC
 2950 DEFPROCscore(s%)
 2960 COLOUR2:COLOUR128:VDU26,4,30
 2970 IFt%>0t%=t%-1
 2980 IFt%>-1PRINTTAB(1,3);t%;" "
 2990 S%=S%+s%
 3000 COLOUR2:PRINTTAB(14-LENSTR$(S%),3)
;S%
 3010 IFt%=0SOUND2,3,100,1:SOUND3,4,100,
1:!&70=ok%:?&72=3:!&73=&4E70:CALLD%:t%=-
1
 3020 COLOUR131
 3030 ENDPROC
 3040 DEFPROCwin
 3050 SOUND1,10,70,10:SOUND2,10,86,10:SO
UND3,10,98,10
 3060 *FX21,0
 3070 IFlev%>8:IFR2%>=8R2%=R2%-1
 3080 IFlev%>20:IFR3%>=8R3%=R3%-1
 3090 M%=-1
 3100 IFlev%MOD4=0Bg%=Bg%+&48
 3110 FORT=1TO3000:NEXT
 3120 FORI%=1TO3:VDU19,I%,VALMID$(STR$(v
c%(cc%)),I%,1);0;:NEXT
 3130 lev%=lev%+1:cc%=(cc%+1)MOD4
 3140 data%=data%+10:t%=tt%+1
 3150 V%=V%+25
 3160 IFlev%=33lev%=1:data%=3630:Bg%=&4E
B8:t%=16
 3170 oldS%=S%
 3180 IFS%>HS%VDU26,4:COLOUR1:COLOUR128:
PRINTTAB(14-LENSTR$(S%),1);S%:HS%=S%
 3190 ENDPROC
 3200 DEFPROCres(r%)
 3210 IFres%MOD2=0mod%=2ELSEmod%=4
 3220 rmc%=(rmc%+1)MOD4
 3230 IFrmc%MODmod%>0x%=x%-X%(M%,k%):y%=
y%-Y%(M%,k%):k%=k%-1
 3240 IFres%=0:IFk%>4ANDk%<(tk%-4)MOVEx%
-16,y%:PRINTR$
 3250 IFres%=1:IFk%>1ANDk%<(tk%-3)MOVEx%
+24,y%+16:PRINTR2$
 3260 IFres%=2:IFk%>4ANDk%<(tk%-4)MOVEx%
-16,y%-20:PRINTR$
 3270 IFres%=3:IFk%>1ANDk%<(tk%-3)MOVEx%
-8,y%+16:PRINTR2$
 3280 dv%=5
 3290 ENDPROC
 3300 DEFPROCduo
 3310 IFss%=1!&70=C%:?&72=3:!&73=ikon%:C
ALLD%:ss%=2:p=1:wc%=0
 3320 IFss%=2wc%=wc%+1:IFwc%>dv%wc%=dv%
 3330 IFwc%=dv% !&70=C%:?&72=p:!&73=P%:C
ALLD%:SOUND3,5,90,1:p=p+1:wc%=0:IFp=4ss%
=0:!&70=C%:!&73=K%:CALLE%:box%(bn%)=1:PR
OCscroll
 3340 ENDPROC
 3350 DEFPROCothers
 3360 IFlev%>12:IFRND(R1%)=1R%=(RND(2)-1
)*&48+&5260:ENDPROC
 3370 IFlev%>8:IFRND(R2%)=1R%=(RND(4)-1)
*&48+&5140:ENDPROC
 3380 IFlev%>20:IFRND(R3%)=1R%=ob%:ENDPR
OC
 3390 ENDPROC
 3400 DEFPROCtunnels
 3410 IFWD%=3:IF(wb%-bof%(WD%))=tuL%sbn%
=sbn%+10:wb%=sbn%:x%=x%+960:ENDPROC
 3420 IFWD%=1:IF(wb%-bof%(WD%))=tuR%sbn%
=sbn%-10:wb%=sbn%:x%=x%-960:ENDPROC
 3430 IFWD%=0:IF(wb%-bof%(WD%))=tuU%sbn%
=sbn%+70:wb%=sbn%:y%=y%-672:ENDPROC
 3440 IFWD%=2:IF(wb%-bof%(WD%))=tuD%sbn%
=sbn%-70:wb%=sbn%:y%=y%+672:ENDPROC
 3450 ENDPROC
 3460 DEFPROCholes
 3470 VDU5:col%=0
 3480 IFis%=1READtuL%,tuR%:GOSUB3520
 3490 IFis%=2READtuU%,tuD%:GOSUB3530
 3500 IFis%=3READtuL%,tuR%,tuU%,tuD%:GOS
UB3520:GOSUB3530
 3510 ENDPROC
 3520 hx%=140:hy%=828-(tuL%DIV10)*96:GCO
L0,col%:FORI%=hy%TOhy%-72STEP-24:MOVEhx%
,I%:PRINTW$:MOVEhx%+992,I%:PRINTW$:NEXT:
RETURN
 3530 hy%=852:hx%=164+((tuU%-1)MOD10*96)
:GCOL0,col%:FORI%=hx%TOhx%+72STEP24:MOVE
I%,hy%:PRINTW$:MOVEI%,hy%-698:PRINTW$:NE
XT:RETURN
 3540
 3550 DEFPROClose
 3560 VDU26,4,30
 3570 S%=oldS%
 3580 !&70=ok%:?&72=3:!&73=&4E28:CALLD%:
SOUND0,-15,3,20:SOUND1,2,120,20
 3590 t%=tt%
 3600 REPEATUNTILGET=32
 3610 COLOUR128:COLOUR2:PRINTTAB(6,3)"00
000000"TAB(14-LENSTR$(S%),3);S%
 3620 ENDPROC
 3630 DATA50,0
 3640 DATA50,0
 3650 DATA50,0
 3660 DATA50,0
 3670 DATA50,0
 3680 DATA50,0
 3690 DATA50,0
 3700 DATA50,0
 3710 DATA48,0
 3720 DATA48,0
 3730 DATA48,0
 3740 DATA48,0
 3750 DATA48,0
 3760 DATA48,0
 3770 DATA48,0
 3780 DATA48,0
 3790 DATA48,1,31,40
 3800 DATA48,2,6,66
 3810 DATA48,1,51,60
 3820 DATA48,2,2,62
 3830 DATA48,1,1,10
 3840 DATA48,2,1,61
 3850 DATA48,1,61,70
 3860 DATA48,2,10,70
 3870 DATA48,3,31,40,8,68
 3880 DATA48,3,51,60,2,62
 3890 DATA48,3,1,10,1,61
 3900 DATA48,3,11,20,9,69
 3910 DATA48,3,41,50,7,67
 3920 DATA48,3,61,70,8,68
 3930 DATA48,3,21,30,4,64
 3940 DATA48,3,1,10,6,66
```

```
  10 =    0 0 |  800 =  2AA C | 1590 = E76F 6 | 2380 = DCC5 A | 3170 = 3486 C
  20 =    0 0 |  810 = AC01 F | 1600 = 8FDC 4 | 2390 = 61B1 8 | 3180 = 1605 8
  30 =    0 0 |  820 = C64B 9 | 1610 = B882 C | 2400 = 3915 B | 3190 = ED0F B
  40 = 8F35 5 |  830 = FD7E D | 1620 = D2A7 E | 2410 = 97AA 7 | 3200 = 6CFF E
  50 = 17F0 C |  840 = BC06 4 | 1630 = E76F F | 2420 = 3D49 F | 3210 = 1A4E B
  60 = EDC5 2 |  850 = D50E 8 | 1640 = DBD8 1 | 2430 = A028 B | 3220 = 25A0 A
  70 = E91B 6 |  860 = DEA6 6 | 1650 = 9B00 A | 2440 = 17AA 6 | 3230 = 4343 5
  80 =  D57 0 |  870 = CE1F A | 1660 = C823 B | 2450 = 8ACB 5 | 3240 = 71A9 9
  90 = 11C6 C |  880 = 265B F | 1670 = ED0F E | 2460 = ED0F D | 3250 = CBAC 0
 100 = FAE5 5 |  890 = FCF6 9 | 1680 = B3E5 7 | 2470 = 6435 3 | 3260 =  2A1 6
 110 = 2C83 E |  900 = 74D1 F | 1690 = AAE3 7 | 2480 = E388 C | 3270 = F3D0 7
 120 = 2C83 7 |  910 = 708F 6 | 1700 = 8AA2 B | 2490 = 74DD 9 | 3280 = 8D3F 7
 130 = E369 C |  920 = 6DB2 E | 1710 = 3237 D | 2500 = 6A63 1 | 3290 = ED0F 2
 140 = 3320 0 |  930 = 94F8 B | 1720 =  D9E 3 | 2510 = B60D 2 | 3300 = 49F3 A
 150 = B365 6 |  940 =  D8D 7 | 1730 = B7DE E | 2520 = 4BF6 4 | 3310 = 9981 5
 160 =  85A B |  950 = 721F 9 | 1740 = EC08 E | 2530 = D2BC 4 | 3320 = F3F4 D
 170 = 5399 0 |  960 = ED0F F | 1750 = 2C83 B | 2540 = ED0F 8 | 3330 = 767B A
 180 = 5C5B 8 |  970 = B225 E | 1760 = ED0F 4 | 2550 = 7414 0 | 3340 = ED0F E
 190 = 22CD 4 |  980 = 1913 E | 1770 = A8A2 E | 2560 = 4E35 0 | 3350 = AD24 3
 200 = 8D48 0 |  990 = 37A8 5 | 1780 = B975 2 | 2570 = F242 5 | 3360 = 30E2 8
 210 = E651 4 | 1000 = ED0F 7 | 1790 = CE1F B | 2580 = 50E6 2 | 3370 = DEB8 6
 220 = 5585 C | 1010 = 753D 7 | 1800 = 882E B | 2590 = 8288 4 | 3380 = 769F E
 230 = 81E2 8 | 1020 = F8C9 4 | 1810 = 9556 2 | 2600 = 3821 0 | 3390 = ED0F D
 240 = C1AA 1 | 1030 = F631 A | 1820 = 2C83 A | 2610 = 997F E | 3400 = 3163 B
 250 = 5ABD F | 1040 = 25C7 5 | 1830 = DBAE A | 2620 = ED0F C | 3410 = A736 7
 260 = 7C8F 2 | 1050 = 2C83 9 | 1840 = F631 7 | 2630 = 4477 C | 3420 = 4391 D
 270 = 46CE B | 1060 = DBAE A | 1850 = F6CB 3 | 2640 =  32A 1 | 3430 = 395A 6
 280 = C943 C | 1070 = EE5C 2 | 1860 = F958 5 | 2650 = 7065 8 | 3440 = F19C A
 290 = 9C7D 1 | 1080 = 377A 3 | 1870 =  573 6 | 2660 = 97DA B | 3450 = ED0F 6
 300 = 531C 4 | 1090 = 3859 4 | 1880 = DC09 E | 2670 = DC30 0 | 3460 = 7374 5
 310 = 24BD 9 | 1100 = 2C83 2 | 1890 = 63BD E | 2680 = F401 D | 3470 = A8F3 6
 320 = 9643 5 | 1110 = ED0F A | 1900 = 639F 5 | 2690 = 6D4B 2 | 3480 = 5534 4
 330 = 150C 9 | 1120 = 363B 7 | 1910 = B130 7 | 2700 = ED0F 1 | 3490 = 6E2B 6
 340 = B2F5 5 | 1130 = CE1F D | 1920 = AC04 8 | 2710 = 5456 E | 3500 = D89A A
 350 = FBBE F | 1140 = 3B0D 6 | 1930 =  AAD 4 | 2720 = 87FA 4 | 3510 = ED0F B
 360 = B8C6 A | 1150 = 8201 B | 1940 = 62FB 5 | 2730 = 50EE A | 3520 = 5A1A 9
 370 = DEBB E | 1160 = 9074 4 | 1950 = 2C83 A | 2740 = F603 2 | 3530 = 3C1E 2
 380 = BFBA F | 1170 = 51CA C | 1960 = ED0F E | 2750 = B548 9 | 3540 =    0 2*
 390 = BFBA 5 | 1180 = 6A8D 4 | 1970 =  4D5 D | 2760 = 4033 9 | 3550 = 5191 1
 400 = 58D2 B | 1190 = EC3C 1 | 1980 = E3D1 1 | 2770 = A47B 1 | 3560 = C24D 3
 410 = 63A5 5 | 1200 = 7BF9 D | 1990 = ED0F B | 2780 = ED0F D | 3570 = 77CA 2
 420 = 3061 3 | 1210 =  D5D 1 | 2000 = 26F9 A | 2790 = 8202 F | 3580 = A2F7 9
 430 = 9D5F B | 1220 = 9C8D 5 | 2010 = B94C 4 | 2800 = 34DD 6 | 3590 = C923 1
 440 = BFBA C | 1230 = 6B18 1 | 2020 = 2E43 E | 2810 = 702F D | 3600 = 5B81 0
 450 = B0B6 E | 1240 = 3B29 A | 2030 = AE55 6 | 2820 = 3685 D | 3610 = DB49 A
 460 = B7DE F | 1250 = CD0C F | 2040 = AC17 9 | 2830 = 8041 F | 3620 = ED0F 1
 470 = 1296 7 | 1260 = DF84 5 | 2050 = 3067 8 | 2840 = D58D 6 | 3630 = 9C18 4
 480 = DBA3 F | 1270 = DB59 C | 2060 = 624C 1 | 2850 = BD5C 2 | 3640 = 9C18 F
 490 = BFBA A | 1280 = 2BF7 C | 2070 = A0AE 8 | 2860 = ED0F 4 | 3650 = 9C18 0
 500 = B902 1 | 1290 = 3D9A 0 | 2080 = B209 F | 2870 = 5D29 7 | 3660 = 9C18 D
 510 = 6263 0 | 1300 = 51F8 0 | 2090 = DE96 4 | 2880 = 633B 3 | 3670 = 9C18 C
 520 = E257 8 | 1310 = 85B2 3 | 2100 = 8E52 B | 2890 = E5D9 3 | 3680 = 9C18 5
 530 = A6C4 6 | 1320 = 5AF0 D | 2110 = A41A C | 2900 = A7C9 A | 3690 = 9C18 4
 540 = 619A 7 | 1330 = 173E 9 | 2120 = 6F30 6 | 2910 = 8D1B 4 | 3700 = 9C18 F
 550 = FD18 7 | 1340 = ED0F 7 | 2130 = 62FB 7 | 2920 =  15D E | 3710 = 430D 0
 560 = C735 A | 1350 = 5A41 A | 2140 = ED0F E | 2930 = 173E 2 | 3720 = 430D 5
 570 = 1F37 5 | 1360 = C366 2 | 2150 = 73C7 B | 2940 = ED0F 1 | 3730 = 430D 4
 580 = 3BC1 C | 1370 = 8E16 0 | 2160 = E809 A | 2950 = 2786 5 | 3740 = 430D 8
 590 = 59C1 3 | 1380 = 3DED 4 | 2170 = FC1D 4 | 2960 = EB7C 1 | 3750 = 430D 2
 600 = A76B 6 | 1390 = E115 E | 2180 = B962 4 | 2970 = 6C4B 1 | 3760 = 430D 2
 610 = CA2F 8 | 1400 = 875B 1 | 2190 = 236D 8 | 2980 = F792 E | 3770 = 430D 9
 620 = A688 1 | 1410 = F589 8 | 2200 = 50A4 8 | 2990 = 5A9E D | 3780 = 430D 3
 630 = 8F3D 2 | 1420 =    0 8 | 2210 = DE40 A | 3000 = 6289 5 | 3790 = B7C4 F
 640 = C476 B | 1430 = BD93 7 | 2220 = 21DA 5 | 3010 =  D9C 6 | 3800 = CF92 B
 650 = 59AD 0 | 1440 = FE0E 6 | 2230 = 4169 3 | 3020 =  573 4 | 3810 = 1C23 5
 660 = 79C3 7 | 1450 = ED0F 0 | 2240 = 9ACD 9 | 3030 = ED0F E | 3820 = 45E7 5
 670 = 5C88 1 | 1460 = 606D 2 | 2250 = CF62 8 | 3040 =  5FF A | 3830 = A90E 1
 680 = FD21 7 | 1470 = DB5E 0 | 2260 = D532 C | 3050 = 1DB4 6 | 3840 = EE58 5
 690 = 619A A | 1480 =  46A 8 | 2270 = 2C83 E | 3060 = 2B9A 3 | 3850 = C1C0 2
 700 = 53CE 6 | 1490 = 2047 D | 2280 = 364B 2 | 3070 = BE55 7 | 3860 =  822 B
 710 = FD2E 4 | 1500 = E76F 1 | 2290 = 71B8 7 | 3080 = 45CF 8 | 3870 = F72F 4
 720 = 344C A | 1510 = 6003 7 | 2300 = E8C0 A | 3090 = 6A25 4 | 3880 = 2D92 4
 730 = 7121 2 | 1520 = E76F D | 2310 = 295E A | 3100 = 8120 1 | 3890 = 23D5 8
 740 = EAE2 3 | 1530 = ED0F D | 2320 = ED0F 1 | 3110 = 5CB2 7 | 3900 = EE15 7
 750 = 94E8 8 | 1540 =  35B C | 2330 = 43A4 D | 3120 = 32BE 5 | 3910 = 76B5 3
 760 =  9A1 7 | 1550 = 5BE5 1 | 2340 = 4AFB F | 3130 = CBB7 D | 3920 = EDDD C
 770 = 3311 2 | 1560 = 3759 0 | 2350 = CC7E 9 | 3140 = 5489 4 | 3930 =  F90 6
 780 = 529F 1 | 1570 = 9919 2 | 2360 = 1DEC C | 3150 = 1DBB E | 3940 =  21F 9
 790 = 3B99 D | 1580 =  D1A 8 | 2370 = CA84 5 | 3160 = 1728 B |
```

Computaccount (UK) Ltd
11 High Street, Harborne
Birmingham B17 9NT
Tel: 021 428 1111
Fax: 021 428 2028

We are major suppliers to the educational and health sectors

FULL SUPPORT & BACKUP FOR EDUC. USERS

Archimedes

A3000	**£599.00**
A3000 Learning Curve	**£699.00**
A410/1	**£999.00**
A420/1	**£1199.00**
A420/1 Learning Curve	**£1299.00**
A440/1	**£1699.00**
Colour Monitor for A3000/400 Range	**£220.00**

Acorn Archimedes Accessories

A3000 Monitor Stand (Acorn)	£29.00
A3000 Serial Upgrade	£19.00
A3000 1Mb Ram Upgrade	£129.00
A3000 User Port/Midi Podule	£49.00
Prog. Ref. Manual (Risc Os)	£79.00
Risc Os Operating System	£29.00
Podule Backplane for A310	£39.00
Rom Expansion Card	£45.00
I/O Expansion Card	£85.00
Midi add on to I/O	£29.00
Midi Podule	£69.00
Econet Module	£49.00
PC Emulator	£99.00
1mb Ram A400/1 series	£149.00
2nd Floppy A440/1 series	£125.00
2nd Floppy A300 series	£115.00
20mb Hard Disc A300 series	£399.00

PRES Archimedes Accessories

A3000 monitor Plinth	£24.95
A3000 System Housing	£69.50
A3000 External Podule Case	£14.95
A3000 Disc Buffer Board	£48.95**
A3000 20mb Hard Disc	£429.00**
A3000 3.5" Floppy	£75.00**
A3000 5.25" Floppy	£99.00**

Items marked "**" require System Housing

Computerware Archimedes Accessories

A3000 1mb Ram Upgrade	£150.00
A3000 2mb Ram Upgrade	£275.00
A3000 3mb Ram Upgrade	£415.00
A3000 External 20mb H/D	£399.00
A3000 External 45mb H/D	£429.00*
A3000 External 75mb H/D	£659.00*
A400/1 Internal 20mb H/D	£199.00
A400/1 Internal 40mb H/D	£379.00
A400/1 Internal 50mb H/D	£499.00
A400/1 Internal 45mb H/D	£449.00*
A400 Internal 75mb H/D	£549.00*

Items marked "*" require SCSI card

Acorn Master & BBC Accessories

Master 128K Computer	£379.00
Master Econet Module	£49.00
Master Turbo Upgrade	£120.00
Master ROM/RAM Cartridges	£11.95
Master Battery Pack	£4.00
Master Welcome Disc	£10.00
Master Welcome Guide	£10.00
Master Reference Manual 1	£14.95
Master Reference Manual 2	£14.95
Econet Upgrade Kit	£59.00
1772 DFS Ugrade Kit	£49.00
ADFS Rom	£26.08
DNFS Rom	£17.91
64k Ugrade Kit (B+ only)	£34.74
ATPL Rom/Ram Expansion	£38.00

DISC DRIVES

Cumana CSX400 40/80T	£112.00
Cumana CS400S 40/80T	£129.00
Cumana CDX800	£216.00
Cumana CD800S Dual 40/80T	£242.00
Cumana CCD2000	£225.00
Cumana CD358 Dual 3.5"	£160.00

BBC B & Master Software

Interbase	£59.00
Interchart	£32.50
Intersheet	£49.00
Interword	£49.00
Printmaster	£29.00
Spellmaster	£51.30
View 3.0	£52.00
Viewindex Disc	£13.00
Viewplot Disc	£26.04
Viewsheet	£52.00
Viewspell	£34.74
Viewstore	£52.00
Printer Driver Disc	£10.00
Wordwise Plus	£49.00
System Delta	£56.48
System Delta Ref. Guide	£17.35
System Gamma	£43.43
Sys. Delta Order/Invoice	£39.96
Sys. Delta Sales Ledger	£39.96
Sys. Delta Stock Man	£39.96
Sys. Delta Purchase Led	£39.96
Sys. Delta Nominal Ledger	£48.65

Printers

DOT MATRIX

Amstrad DMP4000	£229.00
Amstrad LQ3500 (24 pin)	£229.00
Amstrad LQ5000di (24 pin)	£379.00
Brother M1109	£176.00
Brother M1209	£239.00
Brother M1709	£445.00
Brother M1224 (24 pin)	£329.00
Brother M1724 (24 pin)	£629.00
Brother M1818	£428.00
Brother M2518	£795.00
Citizen 120D Plus	£145.00
Citizen 124D	£229.00
Citizen MSP15E	£289.00
Citizen Pro-Dot9	£299.00
Citizen Pro-Dot9X	£399.00
Citizen Pro-Dot24 (24 pin)	£399.00
Citizen Swift9	£199.00
Citizen Swift24 (24 pin)	£299.00
Colour Kit Pro-Dot	£50.00
Colour Kit Swift24	£38.00
Epson LX400	£179.00
Epson LX850	£252.00
Epson FX850	£419.00
Epson FX1050	£539.00
Epson EX800	£566.00
Epson EX1000	£746.00
Epson LQ400 (24 pin)	£269.00
Epson LQ550 (24 pin)	£359.00
Epson LQ850 (24 pin)	£599.00
Epson LQ1050 (24 pin)	£759.00
Star FR10	£391.00
Star FR15	£509.00
Star LC10	£169.00
Star LC10II	£195.00
Star LC10 Colour	£220.00
Star LC15	£339.00
Star LC24-10 (24 pin)	£254.00
Star LC24-15 (24 pin)	£424.00
Star XB24-10 (24 pin)	£509.00
Star XB24-15 (24 pin)	£671.00
Star XB/FR Color Kit	£39.00
Star LC200 colour	£229.00

DAISY WHEEL

Brother HR20 D/I	£473.00
Brother HR40 inc. Sheetfeeder	£895.00
Brother Twinwriter	£895.00
Olympia ESW1000C	£339.00
Olympia ESW2500i	£629.00
Panasonic KXP3151	£479.00

LASER AND INKJET PRINTERS ALSO AVAILABLE – PLEASE RING FOR PRICES

Books

Archimedes Assem. Lang Bk	£14.95
Archimedes Assem. Lang Disc	£8.65
Archimedes First Steps	£9.95
Archimedes Operating Sys Disc	£8.65
Archimedes Operating Sys Book	£14.95
Basic V for Acorn Archimedes	£9.95
RiscOs Prog Ref Man. Vol. 1-4	£79.00
Ref Gde Archimedes & RiscOs	£18.95
15 Hr WP BBC/Wordwise & +	£6.95
15 Hr Word Proc Use BBC VIEW	£6.95
30 Hr Basic Stand Ed	£12.95
Adv Ref Man BBC Master	£19.00
Assem Lang Prog for the BBC	£11.99
BBC Master Ref Part 1	£14.95
BBC Master Ref Part 2	£14.95
BBC User Guide	£10.00
BCPL The Language & Compiler	£9.50
Complete BBC Computer User	£14.95
File Handling on BBC Micro	£9.99
ISO Pascal on BBC/Electron	£10.00
Mast View Viewsheet & Vstore	£12.95
Master 512 User Guide	£9.95
Master Operating System – Dabs	£12.95
Mastering Interpreter Compiler	£14.95
Mini Office II A Dabhand Guide	£9.95
New Adv User Guide Master B, B+	£19.95
Understanding Interword	£6.50
View 3 Manual BBC	£10.00
View Sheet User Guide	£10.00
View A Dabhand Guide	£12.95
Viewsheet Viewstore	£12.95
Within the BBC Assem Lang	£11.95
Wordwise Plus	£12.95

Please telephone for our FREE extensive catalogue and price lists

★ ★ ★

Hundreds of products listed at excellent prices

HOW TO ORDER

Payment by cheque to:
COMPUTACCOUNT (UK) LTD

Carriage: Items less than £50: £2.95, £50-£100: £4.95
Carriage and insurance on items more than £100: £12.50

Please add VAT at 15% to Total, including Carriage

NAME ....
ADDRESS ....
.... Tel: ....

Quantity	Item	Price	
		£	£
		£	£
		£	£
		Total £	

Send to Computaccount (UK) Ltd., 11 High Street, Harborne, Birmingham B17 9NT
or Telephone 021-428 1111 with your Access details

Items subject to availability. Prices subject to change without notice. Please phone to confirm current price and availability before placing order. All prices listed exclude VAT

Take a 12-month or 24-month

Subscription to THE MICRO USER

and enjoy these benefits

- **An action-packed disc or tape EACH MONTH to save you keying in *The Micro User* listings *PLUS* regular bonus programs!**
- **A series of special cut-price offers throughout the year that are EXCLUSIVE to subscribers!**

If you already subscribe to The Micro User you can still receive your FREE Binder by renewing your subscription in advance. Phone 051-357 1275 for details

Plus

THE MICRO USER
FREE

If you take out a 12 month or 24 month subscription on the form below you'll also get this binder FREE. Worth more than £5, it will keep your copies of The Micro User in perfect condition so you can refer to them again and again for years to come.

THE MICRO USER SUBSCRIBER'S ORDER FORM

*Suitable for Master Compact and Electrons with 640K drives

6-month magazine only subscription

UK rates	Europe & Eire	Overseas (airmail)
£10 ☐ 2516	£16 ☐ 2517	£26 ☐ 2518

12-month subscription

UK rates	Europe & Eire	Overseas (airmail)
£23 Electron ☐ 2512 BBC ☐ 2513		
£26 5.25" 40T ☐ 2450 5.25" 80T ☐ 2451	£38 5.25" 40T ☐ 2488 5.25" 80T ☐ 2489	£58 5.25" 40T ☐ 2480 5.25" 80T ☐ 2481
£29 3.5" ADFS* ☐ 2453 3.5 Arch/BBC A3000 ☐ 2455	£42 3.5" ADFS* ☐ 2490 3.5 Arch/BBC A3000 ☐ 2491	£63 3.5" ADFS* ☐ 2482 3.5 Arch/BBC A3000 ☐ 2483

24-month subscription

UK rates	Europe & Eire	Overseas (airmail)
£41 Electron ☐ 2514 BBC ☐ 2515		
£47 5.25" 40T ☐ 2457 5.25" 80T ☐ 2461	£75 5.25" 40T ☐ 2492 5.25" 80T ☐ 2493	£104 5.25" 40T ☐ 2484 5.25" 80T ☐ 2485
£53 3.5" ADFS* ☐ 2462 3.5 Arch/BBC A3000 ☐ 2463	£81 3.5" ADFS* ☐ 2494 3.5 Arch/BBC A3000 ☐ 2495	£111 3.5" ADFS* ☐ 2486 3.5 Arch/BBC A3000 ☐ 2487

I wish to ☐ take out or ☐ renew *(please tick)* my subscription to The Micro User, and have ticked the correct disc/tape format box on the left

I wish to pay by:

☐ Cheque/Eurocheque made payable to Database Publications Ltd

☐ Access/Mastercard/Eurocard/Barclaycard/Visa/Connect

Expiry Date ____ / ____

All cheques to be in UK Sterling and drawn on a UK bank
Please send me my FREE Binder (UK only)

Name ______________________ Signed ______________________

Address ______________________

Post Code ______________________

Daytime telephone number in case of queries ______________________

Send to: Database Direct, FREEPOST, Ellesmere Port, South Wirral L65 3EB (No stamp needed if posted in UK)

Order at ANY time of the day or night

Don't forget to give your name, address and credit card number

By phone: **051-357 1275**
By fax: **051-357 2813**
By MicroLink: **MAG001**
General Enquiries: **051-357 2961**

MU12

THE MICRO USER Christmas Special Offers

THE MICRO USER Christmas Special Offers

CASIO
TV-400

Watch TV on the move – and SAVE £25

... with the unique CASIO Colour Pocket TV

Look what it offers

- ★ 2" HQM LCD colour screen
- ★ Internal loudspeaker
- ★ Volume control
- ★ Brightness control
- ★ Colour control
- ★ Extendible aerial
- ★ External aerial socket
- ★ Earphone socket
- ★ Automatic tuning
- ★ External power supply socket
- ★ Takes four standard AA size batteries
- ★ 1 year guarantee

RRP £114.95

OUR PRICE

£89.95* *Plus £1.50 post and packing

Please note: The TV430 is tuned for UK PAL broadcasts. Therefore we can only accept orders from the UK.

ACORNSOFT LANGUAGES
FORTH
for the BBC Microcomputer

SAVE £30

SPECIAL OFFER only £19.95

Acornsoft Forth Rom £19.95

Boost your Archimedes or BBC Micro's sound output with

SOUNDBLASTER

Extend the sound capabilites of your BBC Micro, Archimedes, A3000 or Music 5000 by routing the output through the Soundblaster's high quality amplifier and speakers.
The up to the minute amplifier implements the latest microchip technology to produce an earshattering output. Twin volume controls enable you to adjust the output and balance to suit. The quality 50 watt speakers consist of a woofer for thumping bass output, a mid-range unit for crisp music and effects and a tiny tweeter which pumps out the highest frequencies the ear can hear.
The package comes complete with mains adaptor and full instructions.
No soldering is required – simply plug in, boot up your favourite software and turn up the volume.

The essential peripheral for all games players and musicians

ONLY £44.99

SAVE on batteries

For your personal stereo, radio or TV

You know how expensive it is to replace your batteries when they run down. Even with rechargeable batteries you still have to wait 14 hours for a full charge.
We have solved the problem with the unique superfast powerful battery and charger kit.
This amazing device will completely charge four standard AA size rechargeable batteries in under 2 hours and each battery can be recharged at least 1,000 times.
Further, for a limited period we can sell the charger and four rechargeable batteries at the staggeringly low cost of £19.95 (plus £1.50 p&p)

It will pay for itself within weeks!

Increase your wordpower with KEYWORD

The essential enhancement for your word processor

Now you don't have to go hunting backwards and forwards through your thesaurus when you're looking for alternative words, because Keyword from Swift Software is a complete word finder – on a disc! At the touch of a button you can instantly select up to 70 synonyms in any of 1,000 categories – giving you an effective vocabulary of up to 70,000 words.
And it's easy to use. Simply type in the first few letters of a word and you'll be shown all the entries in the dictionary that start with those letter. Then, using the cursor keys (or mouse if you ave one). Just pick the word that's nearest to the one you're looking for and you'll be presented with a comprehensive list of synonyms.
From £9.95 see order form
If you ever find yourself stuck for words, Keyword is the answer! Send for your copy today and you'll never be tongue-tied again.

SAVE £23!
Advanced Teletext System

TELETEXT ADAPTER

With the Morley Teletext Adaptor you'll be joining the 3.5 million households who regularly access the thousands of pages of Ceefax, Oracle and 4-Tel to check programme details, holiday information, weather, up-to-the-minute news bulletins and much more. AND you'll have far more flexibility than if you use a normal TV set – you can store or print pages and program you BBC Micro to evaluate the data for you. While you're watching your favourite TV programme your micro can be printing a review of a film to be screened later, checking your personal share portfolio or even checking whether you've won the pools.

The Morley Teletext Adapter is the most popular unit on the market with more than 10,000 satisfied customers – including the Department of Transport who use it to display weather maps at service stations throughout the country. It plugs straight into the user port, includes menu-driven software and automatically tunes itself to the required channel. You'll be able to store pages in memory, use the real-time clock in your programs and automaically load associated pages each time you select a page from the menu – considerably speeding up access time.

The Morley Teletext Adapter is an ideal companion for your BBC Micro system

Note: If you use your BBC Micro's auxilliary power socket for your disc drive, or any other external device, you will need a power supply which we can supply for an additional £9.95

Normal price £122.60
Special Offer Price £99.95 including VAT and p&p

Look what you get!

- ● Stylish beige teletext unit
- ● Official BBC Advanced Teletext rom
- ● Utilities disc packed with programs to help you make the most of your receiver

---

***FAMILY HISTORY SYSTEM**
TOTALLY new Archimedes version available £25.75

****PAYROLL (Wages)**

**** ACCOUNT PLUS**

MAILING (RND) £35.25 MAILMERGE & STRAIGHT LABELS

2,000 SHEETS LISTING PAPER £16.75 inc.

Micro Trader £230, Micro Stock £86:25 plus other programs
(Prices: *£20.75) (* * £58.25 inc VAT)

Micro Aid

Kildonan Courtyard, Barrhill, S. Ayrshire, KA26 0PS
Telephone: 0465-82288 and speak to Colin

BRITISH BROADCASTING CORPORATION MASTER SERIES MICROCOMPUTER
Archimedes

LEARN BASIC ON DISK!

Are you a newcomer confused by manuals or simply looking for a good reference source on disk? If so our compact step-by-step BASIC Course is just for you. Elementary Part 1 contains 16 full lessons to get you started with many useful tips not often found in books. Suitable for schools, colleges, and the home user, with FULL back-up facility and program library. See news columns in March and June 1990 issues.

By popular demand Elementary Part 2 (Lessons 17-32) now available!

Lessons 1-16 80T £20.95 (3.5" disk or 40T 5.25" on reversible disk £21.95)
Lessons 17-32 £20.95 (ditto £21.95)
Save £4 with both parts for just £36.95 (ditto £38.95)

For BBC B/Master/Compact/Electron and Archimedes with Emulator
Please state 40T/80T and DFS/ADFS. Payment by cheque please to:

UNIVERSAL COMPUTER SUPPORT
168 Hough Road, Walsall, West Midlands WS2 9BQ
Tel: (0922) 30038

THE MICRO USER READER OFFERS

Valid to 31.12.90

Please allow up to 28 days for delivery

£ p

Back Issues

June 1990	£1.75	*2539*	☐	Sept 1990	£1.75	*2542*	☐
July 1990	£1.75	*2540*	☐	Oct 1990	£1.75	*2543*	☐
Aug 1990	£1.75	*2541*	☐	Nov1990	£1.75	*2544*	☐

June-November Bundle (6 issues)	£8.95	*2799*	☐

Add £3 for Europe & Eire/£12 Overseas

November Tape	£4.95	*2612*	☐
November 5.25 40t	£7.95	*2614*	☐
November 5.25 80t	£7.95	*2615*	☐
November 3.5 ADFS	£9.95	*2616*	☐
November Archimedes	£9.95	*2617*	☐

Fontstyle

(see page 137)

Fontstyle	5.25" (40/80T)	£9.95	*2108*	☐
Fontstyle	3.5" (BBC ADFS)	£10.95	*2109*	☐
Fontstyle	(Achimedes)	£11.95	*2110*	☐
64 Fonts	5.25" (40T)	£14.95	*2115*	☐
64 Fonts	5.25" (80T)	£14.95	*2116*	☐
64 Fonts	3.5" (BBC/Archimedes)	£19.95	*2117*	☐

Arcade Game Creator *(DFS only)*

(see page 137)

Cassette & Manual	£9.95	*2268*	☐
5.25" disc (40T) & Manual	£11.95	*2269*	☐
5.25" (80T) & Manual	£11.95	*2270*	☐

Acorn Computing

Acorn Computing Magazine	£2.50	*2356*	☐
Magazine + Disc	£6.95	*2357*	☐

Fun School + Nursery Rhymes

(see page 136)

Cassette	£9.95	*2090*	☐
5.25" Disc BBC B, B+ (40T)	£12.95	*2091*	☐
5.25" Disc BBC B, B+ (80T)	£12.95	*2092*	☐
3.5" Master Version	£24.95	*2093*	☐

Classic Games Compendium

NEW

(see page 136)

5.25" Disc (40T)	£14.95	*2758*	☐
5.25" Disc (80T)	£14.95	*2759*	☐

Ten of the Best Educational Programs *(DFS only)*

(see page 137)

Cassette	£5.95	*2189*	☐
5.25" Disc (40T)	£6.95	*2190*	☐
5.25" Disc (80T)	£6.95	*2191*	☐

Getting Started in BBC Basic

£4.95	*2761*	☐

Dust covers

(see page 136)

BBC B & B+	£3.95	*2220*	☐
BBC Master	£3.95	*2222*	☐
BBC Master Compact	£3.95	*2224*	☐

Pen Tech 2000

(see page 75)

Matt Black	£14.95	*2763*	☐
Silver	£14.95	*2764*	☐
Silver + Black	£20.00	*2765*	☐

HiTech Rolling Ruler

(see page 136)

£5.95	*2795*	☐

Perfect Pair

(see page 136)

Available For:	MO2	Book	Example Disc	Price	Code	Please Tick
Tape users	●	●	-	£19.95	*2271*	☐
Model B, B+ (40T disc)	●	●	-	£21.95	*2272*	☐
Model B, B+ (80T disc)	●	●	-	£21.95	*2273*	☐
Master (5.25" 40T disc)	●	●	-	£24.95	*2281*	☐
Master (5.25" 80T disc)	●	●	-	£24.95	*2276*	☐
Model B, B+ (40T disc)	●	●	●	£29.95	*2274*	☐
Model B, B+ (80T disc)	●	●	●	£29.95	*2275*	☐
Master (5.25" 40T disc)	●	●	●	£32.95	*2282*	☐
Master (5.25" 80T disc)	●	●	●	£32.95	*2277*	☐

Binder *(see page 137)*

£5.95	*2756*	☐

Disc Storage Box *(see page 137)*

5.25" discs only	£4.95	*2052*	☐

Fourth Dimension Specials

	Tape			5.25" 40T/80T			3.5"			Archimedes		
U.I.M.	–	–	☐	£17.95	*2733*	☐	£19.95	*2734*	☐	£27.95	*2787*	☐
ArcadeSoccer	£7.95	*2735*	☐	£10.95	*2736*	☐	£11.95	*2737*	☐	£17.95	*2788*	☐
White Magic	£7.95	*2738*	☐	£10.95	*2739*	☐	£11.95	*2740*	☐	£17.95	*2789*	☐
White Magic 2	£7.95	*2741*	☐	£10.95	*2742*	☐	£11.95	*2743*	☐	£17.95	*2790*	☐
Holed Out	£10.95	*2744*	☐	£12.95	*2745*	☐	£13.95*	*2746*	☐	£17.95	*2791*	☐
Holed Out Extra 1	£7.95	*2747*	☐	£9.95	*2748*	☐	£10.95	*2749*	☐	£10.95	*2792*	☐
Holed Out Extra 2	£7.95	*2750*	☐	£9.95	*2751*	☐	£10.95	*2752*	☐	£10.95	*2793*	☐
Holed Out Bundle of 3	£24.95	*2753*	☐	£29.95	*2754*	☐	£34.95	*2755*	☐	£00.00	*2794*	☐

Teletext Adapter *(see page 126)*

40 Track	£99.95	*2157*	☐
80 Track	£99.95	*2158*	☐
Power supply	£9.95	*2054*	☐

Database Publications DTP *(see page 137)*

5.25" DFS 40 Track	£14.95	*2145*	☐
5.25" DFS 80 Track	£14.95	*2146*	☐

Sound Blaster

£44.99	*2779*	☐

Keyword *(see page 126)*

Archimedes	£19.95	*2352*	☐
BBC/Electron 3.5"	£14.95	*2351*	☐
BBC/Electron 5.25 80T	£14.95	*2353*	☐
BBC/Electron 5.25 80T	£9.95	*2354*	☐

Battery Charger

(see page 126)

	£19.95	*2123*	☐
Postage and Packing	£1.50		☑

Forth Rom

(see page 126)
Add £4 per Rom for Europe & Erie £15 Overseas

£19.95	*2046*	☐

Pocket TV

(see page 126)

£89.95	*2122*	☐

Addition for postage: Europe & Eire add £3 ☐
Overseas add £5 ☐
Unless otherwise indicated

➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ ➡ **TOTAL**

Send to: Database Direct, FREEPOST,
Ellesmere Port, South Wirral L65 3EB
(No stamp needed if posted in UK)

Products are normally despatched within 48 hours of receipt but delivery of certain items could take up to 28 days

ORDER at any time of the day or night

Don't forget to give your name, address and credit card number

By phone: ***051-357 1275***

By Fax: ***051-357 2813***

By MicroLink: ***MAG001***

General Enquiries: ***051-357 2961***

Payment: Please indicate method (✓)

☐ Cheque/Eurocheque made payable to **Database Direct**

☐ Access/Mastercard/Eurocard/Barclaycard/Visa/Connect

Expiry Date: /

No.

Name .... Signed ....

Address ....

.... Post Code ....

Daytime telephone number in case of queries ....

MU12

PUBLIC APOLOGY

WE AT M.D. OFFICE SUPPLIES OFFER OUR SINCERE APOLOGIES TO ALL OUR COMPETITORS IN THIS MAGAZINE. WE SHALL AS ALWAYS OFFER YOU THE PUBLIC OUR GOODS AT PRICES THAT ARE SIMPLY UNBEATABLE

WE GUARANTEE IT!

JUST LOOK AT THESE UNBEATABLE PRICES

3.5" DS-DD DISCS WITH DELUXE STORAGE BOXES

35 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£21.95
45 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£27.95
55 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£32.95
65 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£38.95
75 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£42.95
100 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£49.95
150 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£69.95
200 3.5" DS-DD 135 TPI WITH 100 CAPACITY LOCKABLE STORAGE BOX	£79.95

*OUR 3.5" DISCS ARE **VERY CAREFULLY SELECTED** TO GIVE YOU 100% ERROR FREE PERFORMANCE. EACH DISC IS OFFERED WITH OUR 100% MONEY BACK GUARANTEE AND IS SUPPLIED WITH LABELS*

5.25" DISCS & BOXES

25 5.25" DS-DD 96 tpi with 100 capacity lockable storage box	£13.50
50 5.25" DS-DD 96 tpi with 100 capacity lockable storage box	£18.50
75 5.25" DS-DD 96 tpi with 100 capacity lockable storage box	£24.50
100 5.25" DS-DD 96 tpi with 100 capacity lockable storage box	£29.50
200 5.25" DS-DD 96 tpi with 100 capacity lockable storage boxes	£52.99

*Our 5.25" discs are **very carefully selected** to give you 100% error free performance. Each disc is offered with our 100% money back guarantee and is supplied with labels*

PRICE & QUALITY GUARANTEE

MD Office Supplies prides itself on offering the highest quality product at the best possible prices. In the unlikely event you should ever see a comparable product offered cheaper DO NOT HESITATE, give us a call because we will not match it

WE WILL BEAT THAT PRICE

WE ABSOLUTELY GUARANTEE IT

LOW LOW PRICES FOR BULK BUYERS

For all you large users we have some unbeatable BULK RATES ON OUR SUPERB DS-DD 3.5 DISCS

400 DS DD 135 tpi	£155.00
500 DS DD 135 tpi	£170.00
600 DS DD 188 tpi	£210.00
800 DS DD 188 tpi	£269.00
1000 DS DD 135 tpi	£295.00

AS ALWAYS LIFETIME GUARANTEED UNQUESTIONABLE RELIABILITY. EACH DISC IS SUPPLIED WITH LABEL.

HIGH DENSITY 3.5" DISCS

10 DS HD 3.5" DISCS IN LIBRARY CASE	£14.99
30 DS HD 3.5" DISCS WITH 50 CAPACITY BOX	£39.95
50 DS HD 3.5" DISCS WITH 100 CAPACITY BOX	£49.95
100 DS HD 3.5" DISCS WITH 100 CAPACITY BOX	£89.95

SONY DISC OFFER

We have very limited supplies of **GENUINE SONY BULK DISKETTES** at give away prices. These diskettes come in Sony cuters to prove authenticity this is the real thing. Please quote Sony offer when ordering.

100 genuine Sony diskettes DS-DD 135 tpi	£44.95
200 genuine Sony diskettes DS-DD 135 tpi	£82.95
400 genuine Sony diskettes DS-DD 135 tpi	£159.95
800 genuine Sony diskettes DS-DD 135 tpi	£309.95

With each 100 Sony why not have a deluxe 100 box only £2.99 (Max 2 per person)

This offer must end soon Hurry Hurry

With each 100 Sony why not have a deluxe 100 box only £2.99 (Max 2 per person)

Access

M.D. OFFICE SUPPLIES

18 CRESCENT WAY, FARNBOROUGH, KENT BR6 9LS

TELESALES HOTLINE: 0689-61400

All prices include VAT and delivery UK only. E/OE

Trade Accounts Welcome

VISA

Education Orders Welcome

COLOURJET 132

COLOUR INK JET PRINTER

Compatible with:–

IBM pc
Archimedes
Nimbus
BBC Micro
Amiga
Apple Mac
(serial version)

LOW COST

LIST PRICE
from £636 + VAT

COLOURJET 132
FF
LF
ON LINE
COREL DRAW! PROCESS COLOR CHART
COREL
Printed by Integrex Colour
COREL DRAW!

Low Operating Cost

EMULATES OTHER COLOUR PRINTERS EG. IBM 3852, Canon PJ1080A, Quadjet
PRINTS OVERHEAD TRANSPARENCIES

EDUCATIONAL DISCOUNTS AVALIABLE

INTEGREX LTD., CHURCH GRESLEY, BURTON ON TRENT,
STAFFS DE11 9PT
Tel (0283) 551551
Fax (0283) 550325
T/x 341727 INTEGX

Has upgrading your BBC Micro given you hardware you no longer need? Or have changing interests left you with unwanted software?

This is THE place to advertise your surplus items. Our 105,000 readers are always on the lookout for a bargain and this is the first place they'll look!

MICRO USER CLASSIFIEDS

- Master 128, Viewstore and Viewspell roms in cartridge, Taxan KP810 printer, Voltmace 14b joystick, BBC data recorder, reference manuals parts 1 & 2, Lots of additional games and software, manuals, leads etc £375. Phone 0572 812915.
- BBC B 64k, good condition, with manuals, many tape games. £150 ono. Write to : B W Meads, 19 First Avenue, Havant, Hants. PO9 2QN.
- BBC B Issue7, with DFS, Watford 32k rom/ram, Replay, tape recorder, joysticks, Seikosha GP1QOA + paper and ribbon £330 ono. Write to : G.Marshall, 14 Meadow close, Raynes Park. SW20 9JB
- Master 128, 5.25 & 3.5 disc drives in bridge ats, Teletext, mouse, joysticks, 14" colour monitor, Mini Office II, Novacad, Diagram 2, Fleet street editor, ADU, ACP, all manuals £600 ovno, Tel: 0637 879117 Evenings Weekends
- BBC Master compact, colour monitor, 3.5in disc drive, manual, education games, perfect condition as new £350. Phone 04022 21297 Evenings.
- Cambridge Co-Processor (32016), 1Mb, several languages. £160 ono Tel: 081 878 5261.
- Master 128 plus DS 80/40 drive, colour monitor, Interword, Manuals, Utilities £350. Tel: 0483 575480 Guidford.
- Archimedes A310 base, Backplane graphic writer £520 ono. 0772 824095.
- Electron 64K/turbo, plus1, plus4, t2p4, rombox, graphics rom, 10 games, fully documented, £180 ono. Tel: 0992 469632.
- Acorn Electron with plus2, slogger expansion rom, view W/P cartridge, data recorder, joysticks, all leads, manuals and lots of software, £60 081-803-3460 Edmonton, London.
- BBC, Os 1.2, monitor, twin 40/80 drive, 50 floppies, data recorder, modem /commstar, View, stats/data/office software, manuals. £109 ono. Genuine bargain to clear. Tel: 071-794 6839.
- BBC B Issue 7, Acorn DFS boxed £195 Tel: 0533 663721.
- BBC B Issue7, 40/80 drive, 16k sideways + 32k shadow ram, wapping DTP, Interword + spellmaster, mouse, £300 + quality software, leads, manuals, magazines, extra. Barely used £450. Colour monitor/TV £125. 0235 833294.
- Archimedes 310M with IBM PC emulator. Acorn colour monitor, everything boxed as new + manuals and various software. Risc-os £900 Tel: 0530 223092.
- Master 128, Viglen console built-in twin double sided 40/80 drive, Extra roms and games £350; Kaga super 625 Hi-res colour monitor £250; Philips Bm7502 green screen hi-res monitor £45. Tel 0268-693770.
- Risc-os for sale unopened £30 plus registered postage £4.95 071-381-8369.
- Master 128, Med-res colour monitor: 5 1/5in / 3 1/2in drives: masses of software with reference manuals: glp printer £475 ono. Also Hybrid 5000 and keyboard £200 ono Telephone: 071 223 1697 Evenings.
- BBC B. DDFS 40/80 Drive, As new, 16k SWR, Tape recorder, joystick, loadsa games (Tape) £300 ono. Tel: Plymouth 0752 894141 evenings.
- BBC B, 7 Watford DFS 1.44, 32K sideways ram, 40/80T, 15 games, Mini Office II, Transfer rom £250. Tel: 081 777 2809.
- Archimedes A310, Risc os, duel drive ,colour, as new, handbooks I'm hooked (need cash for 540) £450 081 398 4743.
- Permanent memory systems B2p-6502 second processor with bos rom, unused, user guide £55. Tel: 0978 761136.
- Acorn Teletext adaptor, boxed as new including ATS rom. £40 Tel: 0226 732801 after 6pm.
- BBC B, Issue 7, 40/80 disk drive DDFS, 14 Micro Users, loads of games on disk + tape, Wordwise + word aid + printer. Tel: 081 946-8751 after 6pm.
- Panasonic cut sheet feeders new unused KX-P32 for printers P1592 P1595. KX-P35 for printers P1524 P1540 £125 each, KX-P34 for P1083 P10912i £50 Tel: 0703-292355.
- BBC B Issue 4, DFS/ADFS twin DSDD 80T discs. Quest paint with mouse. Games and magazines £250 ono. Also BBC B Issue 7 with cassette £120. Tel: 0279-814448.
- BBC B, os1.2, View rom £140 ono. Tel: 0274 546460 Evenings.
- BBC B. Intergra-B board (equates to master), Challenger DDFS, 40/80T disk drive, RAM disk. All in Viglen case. TV/monitor, Epson RX80 printer, Interword, software, books, magazines. Complete system £395. High Wycombe 0494 26495.
- Archimedes 310, colour monitor, printer, software, manuals £820 ono. Tel: 0322 527250.
- 512K board, manuals, discs £75. Morely Teletext adaptor. Roms. Discs + design 7 £45. Tel: 0444 811716.
- Juki 2200 daisywheel printer, typewriter parallel interface connects BBC £90. 071 482 1683.
- Masterdisc master only "disc mag", lots of progs/games etc. Cheque/cash payable to Andrew Nibbs for £1.50. 2, Seaview ,Hoylake. LA7 2DD.
- BBC B, DNFS, Viglen 40/80 double- sided drive, manuals, leads , disks. £300 0742 447278 (Day). 0246 411411 Evenings.
- BBC B Issue 7, DFS, Dual 40/80T drives, Watford Rom/Ram expansion IV. Viglen case roms manuals £350. Robert. Tel: 0268 692336.
- BBC software: Interbase, Viewsheet, View, Starbase, Ultracalc II, CommstarII, Wordwise, Graphics, RH pen, and more. All for £60. Tel: 081 864 4805.
- Watford CDPM800S 3.5in and 5.25in disk drive unit £140. Tel: 0707-54311.
- BBC/B double
  40T disc drive, Zenith green monitor, Nec printer, Manuals £330 Tel: 081 460 2515 Evenings.
- Archimedes 310M colour 45Mb SCSI, 2 slot backplane ,2nd drive interface, Cumana 3.5 / 5.25in disc drive, midi interface £1080 ono. Tel: 0226 242835.
- Master Replay system including romboard 3 £40. 80T disc drive with PSU £60. Master reference manuals £10. Disc users £20. Dumpout 3 £10. back issues acorn user £10. Phone 0326 240734.
- Master 512, Viglen twin 40/80 with D/S, Teletext adaptor, cartridges, rom/ram board. Joystick, mice. Many BBC/Dos applications, games, utilities, magazines, roms, discs, software and hardware manuals, £600. Tel: 0652 KL 648571 Scunthorpe.
- Master 512, opus 40/80 twin drives, Music 4000/ 5000, Joysticks, mouse, plinth, interword, Exmon II, All manuals, leads etc. plus extra documentation, lots software £650. Tel: 081 554 3023 after 4.30pm.
- BBC Dos 1.2, Microvitec monitor, dual Cumana 40/80 drives, Panasonic KXP-1080 printer Atpl sideways, View, Viewsheet, Wordwise, Printmaster, Graphics, Disc Doctor included, manuals £££££ software including AMX super art room total value +£2000 accept £650 ono Phone 0942 211612.
- New BBC B with DFS plus Acorn data recorder boxed unused 3 vols Micro User £300. Phone 061 794 1233 eves.
- Model 'B' 32K. in Viglen Console, with twin switchable 40/80 disc drives, 8271/1770 DFS, cooling fan + 32k sideways Ram/Rom board. 32k Shadow Ram Board. 1451 high resolution Microvitec Colour Monitor. ROMS as follows, Interword, Intersheet, Interchart, Spellmaster, Mega Rom, Basic Editor, Dumpout. 40 discs of games, CAD drawing progs and graphic art programs, ROMS etc, (aprox price of software and hardware is in excess of £5000). Also thrown in computer desk. Complete with all manuals. May split. Offers around £650.00. Tel: Npton. 0604 401503 after 6.00pm.
- BBC Master; Cumana dual 40/80 drives with PSU; ROMs - Overview, Wapping Editor, ADI; Pixel Perfect + Artpack, Office Master, Beta-Base; Various games; Reference manuals 1&2, New advanced user guide, Advanced Disk User, Introduction to Assembly, Welcome guide; Watford Le modem + ROOM; Quest mouse. For quick sale £400 only. 0903 773340 day, 0903 782941 evenings.
- Panasonic 24pin Printer KXP1124 as new boxed £190 ovno. 4mation "Snatch" for 24 pin printer graphics dump never used £12. 0926 881507.
- BBC B Torch Z80 second processor 40/80T twin disc drives. Wordwise+ Commstar roms lots of software + games £300. Colour monitor £100 All as new , new cassette data recorder £30 Marlow 0628 485581.
- Master 512k 80186 co-processor. Gem software, mouse, manuals £90 ,modem, commstar 2 rom, £20, beebug dumpmaster rom £15, cartridges £5, joystick £10, advanced reference manual £10. 0924 828037 wakefield.
- Master 128 twin ADFS disks, monitor, stand, modem, joystick, many programs, games, books, magazines offers John Stolz 0625 619855, 0829 70670.
- BBC B OS1.2 plus leads, joystick and approx. 30 cassette games inc. Elite and Revs £140. Tel: 081 692 4894.
- BBC Master 128, AMX mouse, super art, stop press, wysiwig rom, replay disc drive 40/80, every Micro User since April 87 reference manuals, view, manuals+more, books, many games elite etc £400 . Phone 081 851 5519 evenings.
- Microvitec colour monitor £75, 40/80 disc drive £50, Morley master rom board £20, 32k ram cartidge £15, Interword plus spell-Master £40, Master rom £15, Press ADT, AFM ADI Roms £15, each, Master Reference manuals £10 Tel Lincoln 0522 720713.
- Solidisk 256k 2/4mhz expansion board. Sideaid 256 rom Utility disc solidisc 2.12 ADFS rom and manuals £50 Evenings Telephone 0285 659837.
- Master 512, Twin DSDD disc drives, mounted in Viglen console. Colour monitor. Data recorder. Full set of manuals plus many books. Various software, including unused C Language. Mouse etc. £650 ono. Tel: 0623 758862 or 754617.
- Archimedes 310 colour VGC two drives £700 ono Tel: 0706-817570
- BBC B. Acorn DFS 40 track. Acorn light-pen + software games on tapes and discs. Tape recordeer included. Magazine and books. Quick sale: £250 ono Tel 0625 871154 Matthew.
- Huge selection of master compact games for sale. All original for details. Send SAE to Julian Boreham, 43 Sough Hall avenue, Thorpe Hesley, Rotherham South Yorks. S61 2QJ.
- Master 128, Opus Dual disc drive modem daisy printer, Teletext, Master Rom, Overview, Moneywise £395. 06285 25519.
- BBC Micro 40/80 tracle disk drive, Teletext adaptor, AMX mouse, Rom expansion board, 25 blank discs, Games on cassette, ROMS, Manuals, Magazines, £380. Phone 476-4275 after 4pm.
- Wanted Badly! BBC B version of Chalice software vector 2. If you can oblige Please Tel: 0670 714795.
- A3000, CM8833 colour monitor, Panasonic KXP 1081 printer. Serial Chip fitted, Many magazines all manuals, Two books, E-Type game. Blank disks. Tel: 061 486 9642. Only £700, Excellent condition.
- Canbridge coprocessor 1Mb 32016 with panos release 13 and all languages £350. Also Matrix 3 Bcpl gks. Phone BB on Bedford 750770.
- BBC Master compact 3.5" drive, green screen monitor, View, Interword, Viglen rom cartridge system £325. Tel 061 620 2064.
- Master compact entry system, serial upgrade, over £250 software only £300. Tel 0793 762467 evenings.
- BBC Touch pad for sale. Interested call Chris on 081 556 7992.
- BBC B issue 7, disc drive, Watford shadow and sideways rom/ram boards, many roms and discs, touch pad, joysticks, Acorn cassette recorder, books. £275. 0244 682136.
- BBC B 32k Acorn and 32k Watford DFS, 40/80 Ahkter disc drive rom/ram board, leads, manuals, sofwtare, desk. Offers to 0702 558025 Marc.
- BBC B 40/80T Watford 5.25" drive, colour Tv/monitor rom expansion board, wordwise, Micronft, Dumpout3. Software and all manuals. Joysticks. All in good order £350. Tel 081 941 2887.
- Master 512, Watford 40/80T disc drive, Philips green monitor, BBC joysticks, mouse, gm suite, reference manuals, All other manuals, view, viewsheet, interword, £450. The lot. Phone 071-793 0330 Weekdays.
- Ideal Christmas Gift? Practically unused BBC B and cassette recorder, games and accessories excellent condition £160. Tel: 081 863 3390.
- Master 512k with gem software excellent condition. £320 ono Tel: John 0742 876537 after 6.30pm.
- BBC B Disc drive D/s 80/40 32k sideways ram. Music 500 Joystick, Colour monitor, Watford DFS, Wordwise+, Mini Office 2 + lots of games. £300 quick sale phone 081 455 4005 and ask for Michael Also Apollo modem E50.
- Archimedes 440, Taxan 770 Multisync, Star LC 24-10, 5.25inch interface, PC Emulator version 3 , C Complier, Risc-Os, Games, Manuals. £1600. Telephone 0342 323176 after 5pm. 0737 776162 8am to 4pm Sussex.
- BBC issue 7, £175. Twin drives £95, Microvitec 1441 Hi-Res, £175 081 954 1851.
- Master 128, twin 40/80 disk drives, colour monitor, Citizen 24pin printer, manuals and software including Viewstore. All V.Good condition £725. Telephone 0257-426789. N.W. England.
- Hybrid Music 5000 synthesiser, 4000 keybaord software and footswitch. All still in original packaging. £250 ono 0223 811487.
- Tatung desk top micro computer TPC 2000, two floppy discs, six kilobytes Ram, four KiloBytes rom. Printer TP700 £150 ono. Phone 02407 5063.
- Star LC0 colour printer. Boxed, as new. Used once. £150. Tel : 0925 601497.
- Micro User every issue to date Phone Phil 0952 581415.
- 140 BBC Games for sale tares disc good condition very cheep send SAE to caspar loftus brigham 38 drayton green, london ealing, W13 OJF or phone casper on 081 997 8749.
- Master 128 40/80 T DDrive built. into monitor plinth, plus colour monitor, music 500, Synthesiser and many games. Also master office bargain at £500 Tel: 0977 797139 Evenings.
- Archimedes A310 with colour monitor. Quick sale: £580 - Call 081 959 3377.
- A310M Base Risc os £500. Pascal release 2 £70. MP165 (Epson FX Compatible) printer £100. BBC B os1.2, tape recorder, DS 40/80 disk drive, colour TV/RGB monitor, Wordwise + Print Master Roms £350. Tel: Ian 031 668 1410.
- BBC B+, Microvitec drives two 51/4inch, one 31/2inch, one 40/80T Watford double density board, sideways Watford board, loadsagames, joystick, modem, software + extras £250 ono 0793 486312 evenings.
- Master 128, 40T disc drive, digimouse + AMX MAX rom, Viglen cartridge system, Viewspell and printmaster roms, teletext adaptor, joysticks, software etc £375 tel: 0745 583930 N.Wales.
- For Sale unwanted 1st word plus version II £50 0202 432489.
- Microvitec 1451 medium resolution RGB £130 Epson FX80+ £50. Phone "Y-M" 0223 353718 evenings.
- BBC B 1.2os, 40/80 drive, Tape-Rec books W/Proc, lots games. £230 ono Dorking 0306-883865.
- Master, drives, monochrome, DTP, software, KXP1081, dumpout, mouse £550. BBC B, recorder, joysticks, software £150, Salibury 331232.
- Electron/BBC software SAE for list C.Richards, "Thorneycroft", Llanmadoc, Gower. SA3 1DG.
- Watford 32k Shadow ram and Watford solderless ramboard with 16k sideram fitted £50 the pair - will split phone 0792 201898.
- Wanted: Computer Concepts Interbase with full documentation. Tel: 0544 8301 Herefordshire.
- Conqueror £12, Inertia £10 on A3000 discs. Smith 0243 670647.
- BBC B issue 7, DFS Interface £175 - Dual 40/80 drives PSU £125 - 0252 878148.
- BBC B issue 7, 1770 DFS, Z1F socket, cassette recorder, £170. Taxan 12" amber monitor, £55. Exmon II rom, £18. Tel 0706 76519 eves.
- Wanted Double Phantom Combat for BBC B can anybody help and ATPL board 0287 638497.
- Atari 520STFM (upgraded 1Mb) DSDD, 48Mb Hard-drive scanners monitor + many more professional packages and software. Excellent condition. For list call En 0843 851694. 9pm-12pm weekdays.
- Master 128, 80186 IMB co-processor, colouor monitor, 30Mb hard disk, 40/80T drive, Music 500, modem, mouse, joystick, software and all manuals. £900 ono. Tel: 0482 861307.
- BBC B, Double disk drive 40/80 Prestel, Plinth, TV alternator, 50 books, joystick £300 software including fleet street editor, wordwise, graphic roms. £350 ono David 0204 591842.
- Atari 1040STFM, 20Meg Hard Drive, 40Meg Hard Drive, usual extras will split 0495 272092.
- Master 128 with internal co-processor. Dual 80 track disc drives. Teletext adaptor. Joysticks. AMX mouse. Mono and colour (uncased) monitors. Lots of S/W and reference manuals. £700. Also Qume sprint 11/55 daisywheel printer. £100. Bedford 0234 712939.
- Torch graduate dual drive IMB compatibilty with xchange software £150, Z80 second processor £700. Teletext adaptor £30. Prism modem 1000 £50. Many games £3-5. Selection of books. Tel: 071 935 0640.
- A3000 2Mb, ANSI C3, Impression, Riscos PRMs, PCEmulator, Twin. basic and assemblermanuals. All original boxes. £900. (November WE price £1214). Write to Bobby Hesselbo, New college, Oxford with telephone number and items interested in.
- A3000, 3,Mb upgrade guaranteed, monitor stand, immaculate boxed, £650, 04022 51461.

PLEASE PRINT THIS AD IN THE NEXT AVAILABLE ISSUE OF *THE MICRO USER*

Name ______________________________

Address ______________________________

____

______________________________ Daytime Tel: ______________

POST TO: Micro User Classifieds, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP

Cheque enclosed for £ ______________
(minimum £2 for 10 words)

I certify that any software offered for sale is original and not a copy

Signed ______________________________

CONDITIONS

- This service is EXCLUSIVELY for the use of private readers. No trade ads will be allowed.
- To avoid encouraging software piracy, all ads will be carefully vetted before they are accepted.
- Ads can only be accepted on the form opposite (or a photocopy of it).
- There is no maximum to the number of words you include in your ad. If there is insufficient room on the form, continue on a separate sheet of paper.
- The cost is 20p per word, with a minimum of 10 words.
- **WE GUARANTEE your ad will appear in the next available issue of *The Micro User*.**

Acorn Computers

Master 128k	£355
Cumana 400k Disc Drive	£97
A3000	£525
A3000-2mb	£600
A3000 Learning Curve	£620

A3000 Jet Set Pack

A3000 plus TV modulator plus:-
INTERDICTOR - TRIVIAL PURSUIT
SUPERIOR GOLF & EUCLID
Only £650

A420 Archimedes Learning Curve	£1155
Archimedes A410/1 base	£920
Archimedes A420/1 base	£1125
Archimedes A440/1 base	£1475
Archimedes A540/1 base	£2550
Archimedes Colour Monitor	£195
Microvitec 1431 Colour Monitor	£195
Interquad Multisync Monitor	£300

Citizen Printers

Swift 24 (24 pin, Epson/IBM/NEC compatible)	£275
Swift 24 printer stand	£20
Swift 24 Colour Kit	£35
Swift 24 Auto Cut Sheet Feeder	£75
120D+ (9 pin, Epson/IBM compatible)	£145

Epson Printers

LX 400 (9 pin)	£150
LQ 400 (24 pin)	£225
LQ 550 (24 pin)	£299

[Deduct £10 from printer prices if also buying a computer]

Epson Lasers

GQ 5000 laser	£950
ELP 7100 laser	£900

Extra Special Offers on Fax Machines:

Amstrad Fax:

FX 500	£375
FX 9600T [Save over £124]	£475
FX 9600AT [With phone trade-in]	£575

Games Computers

Amiga 500 Batman Pack	£360
Amiga 500 Flight of Fantasy Pack	£360
Amiga 500 Screen Gems Pack	£360
Amiga 500 First Steps Pack	£540
Amiga 500 Class of the 90's Pack	£540
Commodore A1084 Colour Monitor	£260
Amstrad 464plus + Mono Monitor	£215
Amstrad 464plus + Colour Monitor	£305
Amstrad 6128plus + Mono Monitor	£305
Amstrad 6128plus + Colour Monitor	£395
Sinclair plus2 - **007** Action Pack	£155
Atari A520STFM Discovery Pack	£230
Atari A520STE Turbo Pack	£360
Atari Portfolio PC	£230
Z88 Computer	£215
Z88 Cambridge Pack	£265

PLEASE NOTE:
Games Machines above are quoted inclusive of VAT

All prices exclude VAT and are available for a limited period and are subject to availability.

Phone for current price and products not listed.

Willow Software
Mail Order Office - Callers by appointment
Tel: (0934) 863087

Willow Software
The Willows, Wrington Lane
Congresbury, BRISTOL BS19 5BQ

CAMBRIDGE INTERNATIONAL SOFTWARE

8 HERBRAND ST LONDON WC1N 1HZ
TEL:071 833 4023 FAX: 071 837 6077

P.I.P.P Professional Integrated Project Planner " I think that this will be a package of considerable value to teachers." John Clemente - MicroUser Sept'90 - All National Curriculum Statements up to level 10.

Primary Levels 1-5
Middle Levels 3-7
Secondary Levels 4-10

A cross-curricular Resource and planning database. Now fully RISC OS.

Primary	£45.95
Middle	£49.95
Secondary	£79.95

"...when teachers see this their eyes actually light up with excitement... I haven't seen that in a long time."

NEW!
MAH JONG PATIENCE

The ultimate in patience games. Played with a set of Mah-jong tiles the object is to clear the board. RISC OS and with many options this is one of the most addictive games known to man or Archimedes. £19.95

GAMES & Utilities

MicroDrive the 3D Golf simulator. **£19.95** (new courses coming soon)

Memory Magic the brain teaser for alll the family. **£15.95**

Minipacks 2 & 3 last few only **£20**

Minipack 5 (Fish, Pon, Fireball II) **£29.95**

CIS Utilities SAFE (encryption) Pro Copier V2 COMPEDIT **£11.95**

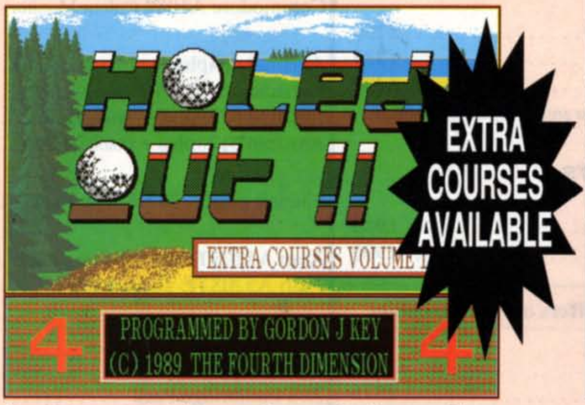
RiscType - The Archimedes Typing Tutor £19.95

Supersound Creations 4 disks of RM's £15.95

Prices include VAT please add £1 for P & P

VISA/ACCESS/BARCLAYCARD

HOLED OUT!!


Holed Out !!
EXTRA COURSES VOLUME 1
PROGRAMMED BY GORDON J KEY
(C) 1989 THE FOURTH DIMENSION
4
4
EXTRA COURSES AVAILABLE

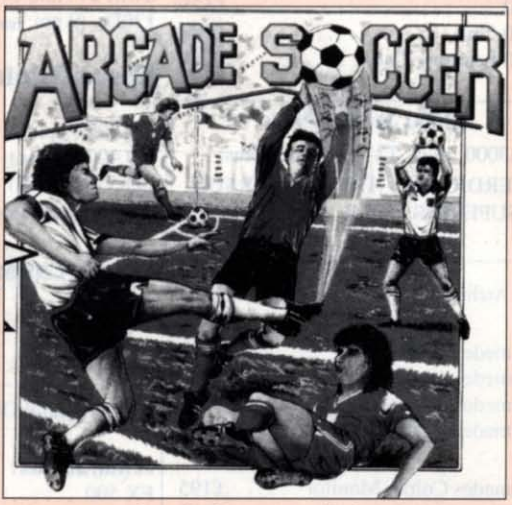
The original two contrasting 18 hole courses. Comes complete with an easy to follow 16 page manual.

Tape £10.95 *SAVE £2*
5.25" disc £12.95 *SAVE £2*
3.5" disc £13.95 *SAVE £2*
Archimedes disc £17.95 *SAVE £2*

HOLED OUT EXTRA COURSES

Each of these two courses has been created to test your golfing abilities to the limits.

Tape £7.95 *SAVE £2*
5.25" disc £9.95 *SAVE £2*
3.5" disc £10.95 *SAVE £2*
Archimedes disc £10.95 *SAVE £2*
All three save even more. See order form


ARCADE SOCCER

Arcade Soccer really is football action at its very best

"The game is very playable and you do get a feeling of involvement as you knock the ball into the corner of the net straight past the diving goalie. It's definitely one to play again, and if you've enough friends it could make for a good day of enjoyment – and not a lot of games can do that. Value for money – 10 out of 10" – review of *The Micro User.*

Tape £7.95 *SAVE £2*
5.25" disc £10.95 *SAVE £2*
3.5" disc £11.95 *SAVE £2*
Archimedes disc £17.95 *SAVE £2*

All available on the Archimedes

U.I.M
ULTRA-INTELLIGENT-MACHINE

U.I.M is a massive 3D arcade adventure set in the future

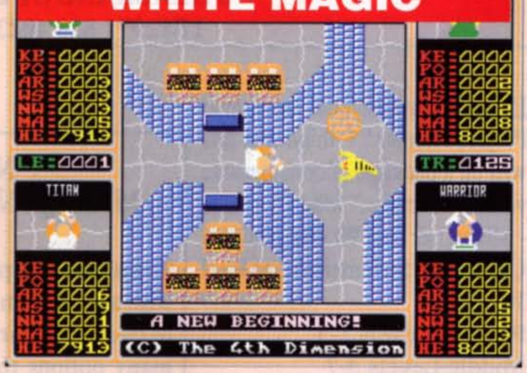
You must travel the oceans, trading in commodities, shares and currency. There are over 250 missions to complete before you will find your goal – the U.I.M. Your craft is a highly manoeuvrable (and expandable) futuristic submarine. The quest for the U.I.M. will be long and involved, the dangers intense, but the reward priceless!

"Will I keep playing it the way I've played Elite for years? And the answer is YES. Graphics 10, Playability 10, Value for money 10" – review in *The Micro User.*

U.I.M. is disc only and will run on BBC B or B+ with 16K of sideways RAM, BBC Master series.

5.25" disc £17.95 *SAVE £2*
Master Compact 3.5" disc £19.95 *SAVE £2*
Archimedes disc £27.95 *SAVE £2*

WHITE MAGIC


KE:0000
PO:0000
AR:0003
WS:0003
NW:0003
MA:0005
HE:7913
LE:0001
TITAN
TK:0125
WARRIOR
A NEW BEGINNING!
(C) The 4th Dimension

WHITE MAGIC 1

White Magic is a arcade adventure in which you control four varied adventures. You can mix between all four characters at will and use their much needed special abilities. It features 32 massive action-packed levels.

A fast-action game which requires fierce hand-to-hand combat and frantic weapon fire.

Tape £7.95 *SAVE £2*
5.25" disc £10.95 *SAVE £2*
3.5" disc £11.95 *SAVE £2*
Archimedes disc £17.95 *SAVE £2*

WHITE MAGIC 2

This includes 32 new and highly dangerous levels plus a complete level designer.

The level designer is easy to use. With it you can alter or design levels from scratch.

"The graphics are superb ...An absolute winner" – *Electron User Golden Game.*

Tape £7.95 *SAVE £2*
5.25" disc £10.95 *SAVE £2*
3.5" disc £11.95 *SAVE £2*
Archimedes disc £17.95 *SAVE £2*

Place your order today, using the form on Page 127

Commanding short cut

£10 Prize letter

SPACE-efficient programming is an important idea, making the best use of all the commands available. This is especially true when writing subroutines for inclusion in longer programs for the Model B since it has so little ram.

It does not always involve solving problems as you would do mentally – more often it is finding a combination of commands that provide a short cut.

Mr Ellis's solution to rounding a number to two decimal places appeared in the June issue of The Micro User.

Apart from its several problems which I outline below, I felt that this 20 line routine was a very lengthy approach to such a simple problem and that there must be an easier way. Well there is.

The trick is to multiply the number by 100 and then to take the INTeger of this, thus removing all digits to the right of the decimal place. Rounding up is achieved by adding 0.5 before taking the INT.

The last task is to move the decimal point back two places to the left. But if we do this by dividing by 100 we may lose one, or both, of the decimal places if the rounded number ends in a zero since, for example, 123.40 is printed as 123.4.

The trick here is to introduce a string variable, say n$, which represents the string of the number.

To insert the decimal point, we simply take the leftmost digits, add a dot and then add on the two right most digits: "123"+"."+"40" = "123.40"

It is only a small step from here to a function which rounds any number to any number of decimal places. This is the six line function set out below. It takes your number n *and the required number of decimal places* p *and returns a string rounded as specified:*

```
100 DEF FNround(n,p):LOCAL
n$,sign$
110 n$=STR$(INT(ABS(n)*10^p
+0.5))
120 IF n<0 AND VALn$>0 sign
$="-" ELSE sign$=""
130 IF p=0 =sign$+n$
140 IF LENn$<p+1 n$=STRING$
(p+1-LEN$,"0")+n$
150 =sign$+LEFT$(n$,LENn$-p
)+"."+RIGHT$(n$,p)
```

Line 110 and 150 form the main algorithm, line 130 prevents a decimal point form being added when rounding to whole numbers. Line 140 solves the algorithm's only failures.

Try out decimals betwen 0-1 without this line and you'll soon see why it's needed. The variable sign$ *is set in line 120 and enables the procedure to handle negative numbers.*

The method I used works on the positive value of n – ABS(n) – and includes a minus sign at the end if necessary.

So to print the number stored in the variable A to three decimal places, you would use:

```
PRINT FNround (A,3)
```

*Finally, there is a limitation with this solution. The INT function only works on numbers less than 2,147,483,648 (2^31). So n*10^p must not exceed this. Also, there's no point in specifying* n *to more than nine significant figures. as Basic cuts the decimal short at this point.*

Mr Ellis's solution suffered from the problem of using the function STR$ on a decimal. He also tediously worked backwards from the last decimal place, when it is only the third place which decides whether or not to round up the second one.

This causes a flaw in his algorithm: As printed, if one decimal digit is greater than 5, it will cause the one on its left to be incremented. But this wrongly rounds 12.345 to 12.34.

If, however, we change the rules so that the increment occurs when the digit is more than 4, another problem crops up. For exmaple, 12.3445 first becomes 12.345 and then finishes as 12.35, which is also incorrect.

Mr Ellis's program cannot cope with rounding negative numbers. It also fails with numbers less than 0.1 and more than 10^9 because these numbers are converted to scientific notation, which is not expected by the program.

I hope I have shown how space-efficient programming can not only significantly shorten programs, thus easing the task of debugging, but can also lead to simpler algorithms which are more easily adaptable to the general situation. – **Simon Shaw, Oxhey, Herts.**

PROCedure for Viewing DTP

WE purchased the Database DTP program for Oaklands School and it works very well for the price, but gave a fault when loading a View file.

On inspection of the program line 850 seemed to be in error and the change shown here gives correct operation:

```
850DEFPROCremove:VDU26:PROC
show:PROCset:ENDPROC
```

Hope this will help others. – **J. A. Schofield, Warsash, Southampton.**

Win a tenner

WANT to write to The Micro User? The addess is: Letters, The Micro User, Europa House, Adlington Park, Adlington, Macclesfield, SK10 4NP.

Writers of the most interesting letters receive a £10 prize.

Art for art's sake

I WOULD like to thank you for the current PD articles, and associated software. Arctist+ on the July disc will not run on a 1Mb machine and if you want it to run then this is what you have to do:

- *Bring up the Task Manager and drag System sprites to 440k.*
- *Select Mode 15*
- *Press f12 and enter:*

```
*Dir !Arctist+.Files
```

Press Return twice to get back to the DeskTop, then bring up the directory viewer for !Arctist+ then Shift+double-click on the !Arctist+ icon. Double-click on Files then double-click on boot.

Things to notice with Arctist+ are the fonts inside the Files directory. Double-clicking on one of them from the DeskTop wil replace the system font with a new one.

This has a wider use than just making your DeskTop look more friendly, as they can be used with !Paint and !Draw for hard copy print-outs.

With !Draw select System Font from the font menu then double click on the required font in the Files directory of Arctist+.

If you find yourself waiting for an outline font to be loaded off floppy disc into !Draw each time they select a new font

➤

➤

size, the answer is to copy the !Fonts directory into the ram disc then double-click it. – **Edward Turner, Maidenhead, Berks.**

More memory for a Master

I HAVE a standard Master 128 and would like to increase the memory size as much as possible. How would I be able to do this and what would I need to fit? I am looking in the region of 2Mb of ram.

Is this possible? If not what size ram can I fit as an option without having to change over to another computer?

Are there any disadvantages of doing this as far as my present software is concerned? – **R. Bowler, Whatton, Notts.**

● While it's possible to increase the memory available on the Master to such a vast amount – using a system similar to that in our July issue – none of your existing software would use it, nor is there any software on the market that would.

To get the kind of memory you're talking about you'd have to upgrade to an A3000 or Archimedes.

With a Master you've already reached the limit of memory for the 8 bit BBC Micro and your only option is to change machines.

However this will affect your existing software as most of it will only work on the 6502 emulator – slowly – if it works at all.

Quest grinds to a halt

HACMAN's Castle Quest fix in the August issue of The Micro User *seems to have part of line 250 missing. Can you help?* – **R. Saunders, Basingstoke, Hants.**

● Oops, the complete line should have been:

```
250 IF INKEY(-256)<>-1 AND
?&ED0<>&A2 PROCconvert
```

The ultimate game?

I HAVE played quite a few very good games on my BBC Micro, like Citadel, Castle Quest, Elite, Dr.Who and the Mines of Terror, Repton 3, XOR and Enthar Seven to mention some of the very best.

But then one day I began playing Exile and now, more than a year later, I have divided computer games into two groups: Exile, and all the others.

Exile is such a fascinating and exciting game that I simply don't understand why there have been so few notes on it in The Micro User. *Is anyone else out there playing the game?*

Well, I have a few problems: First of all, I am not sure that I have finished Exile completely. I managed to find the destinator and take it to the spaceship – which is the aim of the game – but only one of the two rockets started and I seem to have gone into circuit around the planet.

I would have expected some spectacular ending in a game of this quality. Am I missing something?

Another thing: Once I was engaged in fierce combat with the red robot found near the maggot machine. It suddenly stopped dead and sank to the bottom of the lake and just stood there.

Unfortunately I didn't save the position, and later I have not been able to repeat the situation. I must have done something right in the heat of the fight, but I don't know what. Can anybody tell me?

What about the two doped astronauts? Am I expected to save them? It must be impossible to get them to the spaceship.

When you feed bees to the red imps you sometimes get energy capsules in return. Is it possible to get anything else from them?

And now to my worst problem: What can I play after Exile? The game has been such fun that anything else seems so pale and uninteresting in comparison.

There was a mention in The Micro User *of a game named Destiny, which should be something like Exile, but is it? And when can we expect it?* – **Torben Osted, Denmark.**

● We'll pass your questions on to Hac Man, but we're sure you have to rescue the astronauts.

However in this very issue, exclusively to *The Micro User*, we have the complete Exile cheat routine so you can find out if you've missed anything.

EXILE
SUPERIOR SOFTWARE
ACORNSOFT

Sprite redemption

VERY recently I purchased Computer Concepts hand-held scanner for my BBC A3000 and was looking forward to scanning pictures and manipulating them in Pro-Artisan.

Unfortunately it isn't that easy, the scanner will not function correctly in Mode 15 and therefore sprites loaded into Pro-Artisan will corrupt the screen.

Simply loading the Mode 12 sprite in Mode 15 doesn't work either as the palette is different. A quick solution is to scan and save the picture as a sprite and load it into !Paint while working in Mode 12 on the DeskTop. Then change to Mode 15 using the palette.

Click Menu on the !Paint icon and select the Get screen area option, now you can grab any part of the screen and save it before loading it into Pro-Artisan.

Artisan users can load sprites straight into the program without the need for conversion as it runs in Mode 12 and the palette remains unchanged. I hope this has cleared a hurdle as some amazing results can be achieved using Pro-Artisan. – **Chris Hunter, Gildersome, Nr. Leeds.**

Getting into adventures

HAVING bought a BBC Micro about six months ago for my children aged four and ten, the whole family are now using it.

With the computer came a mass of discs, with many games like Colossal Adventure, Colditz, Adventure Quest, Dungeon Adventure and a few more.

Unfortunately there are no instructions with the games and though I've tried endlessly at local shops to obtain instructions, and other software – educational and adventure games – for the BBC B all I get is that they do not stock the software.

My neighbour gave me the February issue of The Micro Usr *and it seems adventure games are still being played, but are they ever solved?* – **B. Newport, Basingstoke, Hants.**

● You can always write to the Mad Hatter for help with adventures, and educational programs are readily available by mail order.

Machine code conversions

WHEN converting other people's machine code utilities to run from rom there is always the problem of deciding where to change an RTS to a JMP exit and if more than one exit exists for the routine or command there can be problems sorting them out.

You can always go through the code a few times and work it out but you may miss one or more. What is needed is some method of forcing the code to return to the exit routine no matter how many, or where, the exits may be. The following code achieves it:

```
310 \Command recognised
320 .this_rom INX
330 LDA command_list,X \ Lo
w byte of command address
340 STA z_page+2         \ z_
page = zero page location
350 INX
360 LDA command_list,X \ Hi
gh byte of command address
370 STA z-page+3
380 \ Get exit address, the
 -1 is crucial
390 LDA #exit-1 MOD256 \ Re
turn address of exit low by
te
400 PHA                \ Pu
sh it on stack
410 LDA #exit-1 DIV256 \ Re
turn address of exit high b
yte
420 PHA
430 JMP  (z-page+2)    \ Do
 command

1000 .exit             \ Ex
it
1010 PLA               \ Pu
ll Y and discard
1020 PLA               \ Pu
ll X and discard
1030 RTS               \ Ro
m exit
```

Lines 310 to 370 get the address of the command and save it somewhere in page zero. This is followed by line 440 JMP (z-page+2) or equivalent.

If the address of the exit routine-1 is pushed on to the stack before the JMP (z-page+2) when an RTS is executed, at the end of the command, the address on the stack is loaded into the program counter just as normal and automatically incremented by one. – **Randy Hutchinson, Pudsey, W. Yorks.**

All in the family

I AM writing to you as a reader of your monthly magazine to ask, if you could advise me of a program for laying out a family tree. – **B. H. Green, Colwyn Bay, Clwyd.**

● We reviewed programs for the family tree back in June 1989, Minerva produce the program Ancestry for the Archimedes while BBC Soft sell the equivalent program for the Master 128.

The program Family History System is produced by Micro-Aid and works on a Model B.

Technique of going sideways

I HAVE noticed that many games have sideways scrolling landscapes. I am contemplating writing a machine code game and was wondering about a sideways scrolling one. I have seen routines in books that do this by programming the 6845 directly.

The problem is that when graphics go off one side of the screen they come back the other one line down. What I want is a continuous scroll – how do I get it? – **Richard Tonge, Chesterfield.**

● The trick is to draw the new part of the screen on the section that's just scrolled on to the right.

As far as the line offset is concerned, you need to apply an adjustment to the scroll value – you'll learn more by working out the exact details yourself.

Building roms

THANKS for printing my Sideways Ram Builder program suite in the October issue – unfortunately there were some omissions and errors that prevent it working.

Listing IV should have been Listing V and neither the original Listing IV nor the memory map were printed, so here they are:

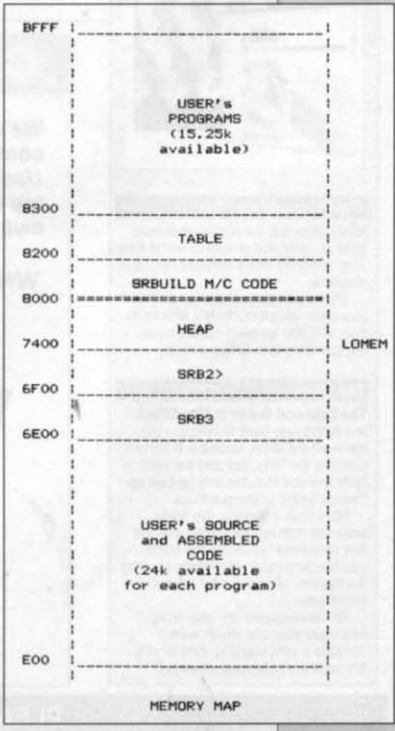
```
 10 REM PROG1
 20 REM by H.R Wall
 30 REM (c) The Micro User
 40 LOMEM=&7400
 50 FOR pass%=4 TO 6 STEP 2
 60 P%=!&70:O%=!&74
 70 [OPT pass%
 80 LDX #(text1-text)
 90 JSR print
100 RTS
110 ]:P%=P%+10:O%=O%+10:[OPT pass%
120 .text
130 .text1 EQUS "Program One":EQUB 0
140 .print
150 LDA text,X:BEQ rts:JSR &FFEE
160 INX:BRA print
170 .rts RTS
180 NOP
190 ]
200 NEXT
210 CALL !&78
220 END
```

```
 10 =    0 0
 20 =    0 0
 30 =    0 0
 40 = D214 4
 50 = ED95 4
 60 = 3889 E
 70 = 95CD F
 80 = 4C92 3
 90 = AD7B C
100 = 9843 F
110 = 28FA E
120 = 80E0 E
130 = CB52 5
140 = 14FC C
150 = 9B5D B
160 = 7FAD 7
170 = 1E9F E
180 = 41AB 3
190 = 8B58 2
200 = 2C83 8
210 = 7F24 5
220 = FD2E 7
```

There are a couple of small changes needed as well. In Listing II the program won't accept directory specifications so to fix this change #48 in line 1900 to #45 and the #90 in line 1910 to #95. In the same listing it's also possible that a false No room *error will occur, this is fixed by changing lines 1040 and 1050 to:*

```
1040 LDA &441:CMP #&BF:BEQ
store
1050 BCC store
```

Finally, due to line number changes the reference to line 90 on page 100 paragraph 1 should refer to line 110 instead. – **Harry Wall, Worcester.**


BFFF
USER's PROGRAMS (15.25k available)
8300
TABLE
8200
SRBUILD M/C CODE
8000
HEAP
7400
LOMEM
SRB2>
6F00
SRB3
6E00
USER's SOURCE and ASSEMBLED CODE (24k available for each program)
E00
MEMORY MAP

ALL programs printed in this magazine are exact reproduction of listings taken from running programs which have been thoroughly tested.

However, on the rare occasions when mistakes occur corrections are published as a matter of urgency. Should you encounter error messages when you type in a program, they will almost certainly be the result of your own typing mistakes.

Unfortunately we cannot answer personal programming queries concerning these mistakes. Of course letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in the letters pages.

THE MICRO USER Reader offers THE MICRO USER Reader offers

FUN SCHOOL!

TAPE	5.25"DISC
£9.95	£12.95

3.5" Master £24.95

Educational Bundle

Ages 2-5	Ages 5-8	Ages 8-12
Alphabet	Balance	Anagram
Colours	Castle	Codebreaker
Counting	Derrick	Dog Duck Corn
House	Fred's Words	Guessing
Magic Garden	Hilo	Hangman
Matchmaker	Maths Test	Maths Hike
Numbers	Mouser	Nim
Pelican	Number Signs	Odd Man Out
Seaside	Seawall	Pelmanism
Snap	Super Spell	Towers of Hanoi

- **Use your BBC Micro to teach and amuse your children at the same time.**
- **Three packages crammed full of educational programs – and so easy to use!**
- **Each program has been educationally approved after extensive testing in the classroom**

NURSERY RHYMES 5

fun-packed educational programs . . . for young children everywhere

This delightful collection of programs is based around children's favourite Nursery Rhymes. There's plenty of sparkling colour, sound and captivating animation to keep them riveted – and as they play they'll be learning all the way.

- ★ **Tell the time with Hickory Dickory Dock.**
- ★ **Assemble the jigsaw in Humpty Dumpty.**
- ★ **Learn to spell with Jack and Jill.**
- ★ **Match the animals in See Saw Marjory Daw.**
- ★ **Play an exciting game in Hey Diddle Diddle.**

It's Amazing
It's Radical
It's the Rolling Ruler

A complete drawing board in one simple unit. With a rolling ruler you can draw:

- ★ Horizontal parallel lines
- ★ Vertical parallel lines
- ★ Perfect right angles with ease
- ★ Any other angles from 1° to 359°
- ★ Clever circles

Available in two sizes 22cm (8in) and 30cm (12in) this great offer gets you both rolling rulers for just £5.95 (RRP £9.99)

It's innovative design gives the new rolling ruler the ability to draw vertical and horizontal lines without lifting it off the paper, parallel lines, angles, circles, musical staves and graphs with ease, making it ideal for the home, the office, schools, workshops and 3D design work.

Perfect companions for your BBC Micro

Dust covers	**£3.95**

Protect you micro with these top-quality covers for the BBC, Master and Compact. They are made of clear, water resistant vinyl, are bound with strong cotton and feature the distinctive *Micro User* logo.

Binders	**£5.95**

These handsome, blue pvc binders are embossed with the *Micro User* logo and come with 12 sturdy metal rods to keep your issues in place, and in perfect condition.

Disc boxes	**£4.95**

These luxury padded boxes also boast the *Micro User* logo and are the ideal storage medium for your floppy discs. They can each hold up to 60 5.25in floppies.

THE PERFECT PAIR

The best-selling, award-winning BBC software is now joined by THE definitive guide

A Dabhand Guide
Mini Office II
DABS PRESS

The Program

Mini Office II is the highly-acclaimed suite of integrated programs which turn your computer into a versatile business machine.

It's the perfect package to increase your personal productivity – with more than 400,000 satisfied users across the complete Mini Office range.

The Book

The Dabhand Guide to Mini Office II is a brand new book to help you get the most out of the software. It not only contains the facts, but also the kinds of hints and tips that can only be built up through years of computer use.

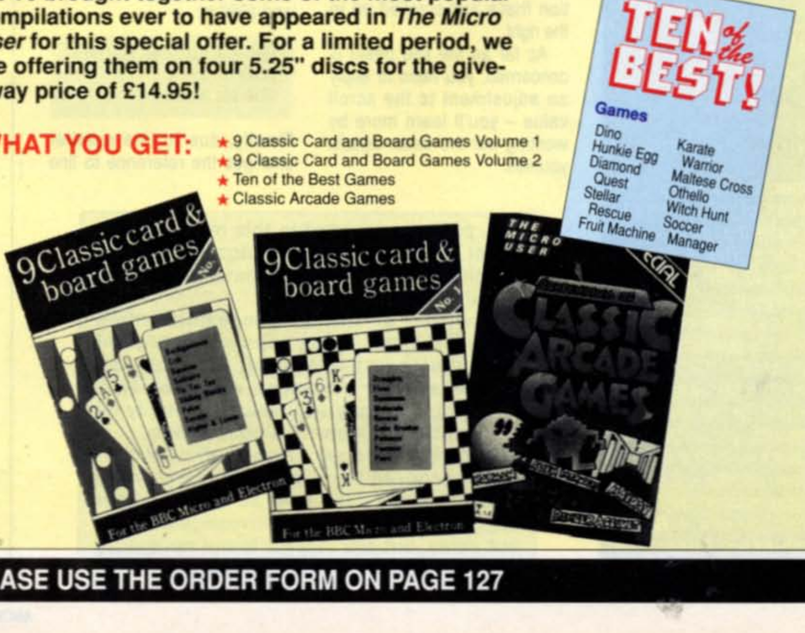
More than a manual, the guide assumes nothing. Beginning with the first sentences typed into the editor, you are led through al aspects of using the system, up to the most advanced techniques.

All the examples are also on an accompanying disc which even includes a very useful routine to print out large spreadsheets sideways.

CLASSIC GAMES COMPENDIUM

We've brought together some of the most popular compilations ever to have appeared in *The Micro User* for this special offer. For a limited period, we are offering them on four 5.25" discs for the give-away price of £14.95!

WHAT YOU GET:
- ★ 9 Classic Card and Board Games Volume 1
- ★ 9 Classic Card and Board Games Volume 2
- ★ Ten of the Best Games
- ★ Classic Arcade Games


9 Classic card & board games
No. 2
For the BBC Micro and Electron
9 Classic card & board games
No. 1
For the BBC Micro and Electron
THE MICRO USER
SPECIAL
CLASSIC ARCADE GAMES
TEN of the BEST!

Games

Dino	Karate Warrior
Hunkie Egg	Maltese Cross
Diamond Quest	Othello
Stellar Rescue	Witch Hunt
Fruit Machine	Soccer Manager

PLEASE USE THE ORDER FORM ON PAGE 127

Acorn COMPUTING

Spring edition of the Acorn guide to software for the whole Archimedes range and BBC A3000. Includes all the latest hardware expansions and peripherals

The official and definitive guide to Archimedes/A3000 software

ONLY £2.50

Complete with 3.5" disc packed with Archimedes utilities plus and addictive Arcade game £6.95

NEW! TEN of the BEST! EDUCATIONAL GAMES

Packed full of some of the best educational games available for the BBC Micro, the new Ten of the Best Educational Games is the ideal way for your children to learn about maths, spelling, anagrams, telling the time, general knowledge, and even the rudiments of running a business!

Specially compiled by the *Electron* and *Micro User*, teams to give a good grounding in all aspects of learning, and at the very special price of only £5.95 on tape, or £6.95 on disc, this collection is a treat you and your children cannot afford to miss!

Tape £5.95
Disc £6.95

Give your children hours of fun, and help them to learn the easy way by ordering your copy today

---

Write you own arcade smashes using the

ARCADE GAME Creator

Arcade Game Creator is a suite of programs for the Electron and BBC Micros. Taken from the pages of Electron User, it lets you into the secrets of writing fast-action arcade games, and provides you with a number of utilities to make design and programming easier.

Among the programs are:

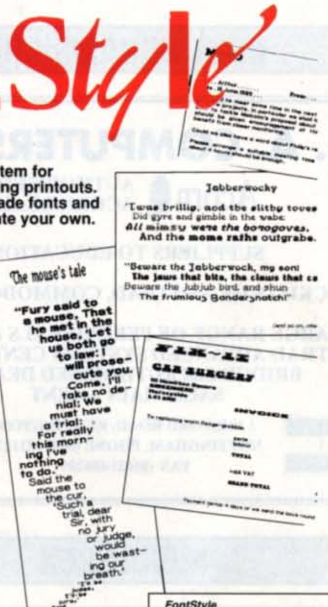
- A mode 5 sprite editor that lets you design your own multi-coloured characters
- A selection of fast print routines that will move sprites both in front or behind other objects on the screen.
- Map generators that will squeeze a Mode 5 screen into 8 bytes!
- Scrolling maps.
- Score update and printing routines.
- ... and much, much more

If you are an aspiring games programmer, this is an offer you simply cannot affort to miss!

Tape + manual	**£9.95**
Disc + manual	**£11.95**

PLEASE USE THE ORDER FORM ON PAGE 127

FontStyle



Jabberwocky

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.

"Beware the Jabberwock, my son!
The jaws that bite, the claws that ca
Beware the Jubjub bird, and shun
The frumious Bandersnatch!"

The mouse's tale

"Fury said to a mouse, That he met in the house, 'Let us both go to law: I will prosecute you. Come, I'll take no denial; We must have a trial: For really this morning I've nothing to do.' Said the mouse to the cur, 'Such a trial, dear Sir, with no jury or judge, would be wasting our breath.'

Fontstyle is a versatile system for creating professional looking printouts. It comes with two ready-made fonts and a designer so you can create your own.

Plus you can now get a set of four discs containing an extra 64 fonts!

Fontstyle is so easy to use. You just type in your text using your favourite word processor – enter the easy-to-remember formatting codes and save it. Then just load in the FontStyle program and you'll have superb results within minutes.

Some of FontStyle's features

- ***Professional-looking results from 9 pin printers***
- ***Simple to use***
- ***Fast draft mode***
- ***64 fonts available***
- ***Up to 8 fonts in any paragraph***
- ***Print any font in different dimensions***
- ***Temporary or hanging indents***
- ***Dynamic control over page layout***
- ***Flexible and easy-to-use font designer***
- ***Ideal for letterheads, invoices, newsletters, memos and so on***
- ***All popular word processors supported***

FontStyle	
5.25in disc	**£9.95**
3.5in disc (BBC ADFS)	**£10.95**
Archimedes (Using emulator)	**£11.95**

Set of 64 Fonts (4 discs)	
5.25in disc	**£14.95**
3.5in disc (BBC/Archimedes)	**£19.95**

Take a step into the world of professional publishing with

DATABASE PUBLICATIONS

DTP

EGYPT
The Gift of the Nile
Adventist Computer User Group
Adventist Computer User Group

This is an easy-to-use and flexible page design system for producing high-quality printouts through your Epson compatible printer. It comes with four of its own fonts to get you started plus a Font Designer to keep you going.

Some of the features of Database Publications DTP

- Independent control of bold, italic, 'thin' and underline characteristics of the system font
- Proportional spacing of both external and system fonts
- Stretching and compressing of any area
- Pixel editing via zoom facility
- Up to A5 page design
- No special disc format
- Four fonts provided
- Font Designer supplied
- Built-in Graphic designer
- Import text or type direct
- Can import cut-outs
- Built-in Mode converter

Database Publications' DTP

5.25in DFS 40/80 track disc (only)	£14.95

Due to the complexity of the program the fill routines will not function correctly with the B+, Master or Compact – all other features are compatible

The Micro User gui

NOTTINGHAMSHIRE

G. A. COMPUTERS LTD

Acorn AUTHORISED ACORN DEALER

SUPPLIERS TO EDUCATION

STOCKISTS OF AMSTRAD, COMMODORE, ATARI

LARGE RANGE OF PERIPHERALS & MEDIA
AMSTRAD ADVANCED SYSTEMS CENTRE & CAMBRIDGE Z88 AUTHORISED DEALER
SAGE MAIN AGENT

VISA

1 WILFORD ROAD, RUDDINGTON,
NOTTINGHAM. PHONE (0602) 211225
FAX (0602) 456289

Access

LONDON

ACORN APPROVED

LONDON DEALER

THE NEW
JET-SET PACK
IN STOCK **NOW**

Easy to get to
Train: WOOD ST Station
(British Rail)
Road: Bottom of M11,
just off North Circular
Tel No: 081-521 1784

Access VISA

AUTOMATIC SERVICES
217 WOOD STREET
WALTHAMSTOW
LONDON E17 3NT

MIDDLESEX

JRLetronics Co

- Archimedes/A3000/BBC
- Computer Peripherals
- Educational & Business Software
- Documentation
- Discs & Paper
- Maintenance of all BBC machines

Proprietor:
J. H. JARLETT

Acorn
The choice of experience
Authorised Dealer

☎ **081-977 8053**

The Annexe, 2 Broad Street, Teddington, Middlesex TW11 8RF

Take the Acorn Inter-Dictor test flight here

VISA

HAMPSHIRE

Acorn Service Centre

ALSYSTEMS

- ● Unix & PCP/IP
- ● Training Courses
- ● Network Installation
- ● Technical Support
- ● Home and Business Computers
- ● The Learning Curve

REPAIRS
computers
disc drives
monitors

GET REAL SUPPORT
CALL US

ALTON (0420) 87213

65 SALISBURY CLOSE, ALTON,
HANTS GU34 2TF.
EDUCATION AND BFPO
ORDERS ACCEPTED

Access VISA

CLEVELAND

NOW AVAILABLE THE A3000 JET SET PACK

TEL: 0642 786922
FAX: 0642 783740

YARM COMPUTERS

HARDWARE – SOFTWARE – PERIPHERALS – SUPPLIES TO EDUCATION, BUSINESS AND HOME

THE LEARNING CURVE

ACORN DEALERS

FREE GAMES PACK WITH EVERY A3000 SOLD TO THE HOME MARKET!

WINPENNY HOUSE, 137 HIGH STREET
YARM, CLEVELAND TS15 9AY

Access VISA

ISLE OF WIGHT

CTS

COMPUTER TUTORIAL SERVICES

ACORN DEALERS
Archimedes &
A3000
All Hardware and
Software

Sales & Business Consultancy
Individual Tuition
Bespoke Software
Micro Computer Supplies

TEL: (0983) 294333 FAX: 298439
17 Market Hill, Cowes, Isle of Wight PO31 7TR

Contact Yvonne Benson on 0625 878888 now to

de to local dealers

NORTHAMPTONSHIRE

Acorn
The choice of experience.
Authorised Dealer

THE LEARNING CURVE

The 420/1 Learning Curve
Acorn Archimedes 420/1
Applications Suite on Hard Disc
Acorn Desktop Publisher 1st Word Plus
Genesis PC Emulator Informative Video
And a Guide to the National Curriculum

PHONE NOW FOR YOUR FREE ACORN TEST FLIGHT
(0604) 760991

CCS
CRADDOCK
COMPUTER SYSTEMS

VISA

Craddock Computer Systems, 20 Osyth Close, Brackmills Industrial Estate, Northampton NN4 0DY

WEST MIDLANDS

MAUDEN SALES

We talk both COMPUTER LANGUAGE & ENGLISH.
Ring and talk to us in either!
Computers picked up at your premises.
Repairs carried out on ours.
We consider ourselves the best in the West Midlands.
Why not find out for yourselves.
We are also stockists of Educational Software.

We would like to wish all our customers a Happy Christmas and a Prosperous New Year

MAUDEN SALES
P. O. BOX 23, 1st Floor Crescent Arcade,
Bridgnorth Road, Wollaston, Stourbridge,
West Midlands DY7 6SQ. Tel: 0384 441655
Office hours: 10am-1pm Mon.-Sat. Except Thursday

AVON

C.J. COMPUTING

Acorn
Authorised
Acorn Dealer

SALES • REPAIRS • SPECIAL NEEDS
Please contact us for all your Acorn computers
(Hardware & Peripherals)
We specialise in tailoring computer systems
for special needs
Tel: (0454) 615905
Stoke Lodge, Bristol

CHESHIRE

L. M. R.

Home
Technical Support
Business

Acorn
AUTHORISED
DEALER
SERVICE
CENTRE

Education
Inservice Training
Special Needs

LEE MICROCOMPUTER REPAIRS
A comprehensive service to satisfy your requirements.

17a Marsland Road, Sale, Cheshire, M33 3HP
☎ 061 962 8872

HERTFORDSHIRE

VIPRAY COMPUTER SUPPLIES

LEARNING CURVE NOW AVAILABLE! £690 plus VAT with 1Mb upgrade

ACORN
AUTHORISED
ACORN DEALER

Suppliers to Education

We stock Acorn and Amstrad's, along with offering a repair service and computer consumables such as Discs and Cables
Disks • Ribbons • Paper • Cables

YOU KNOW WHERE TO COME

3 SPICERSFIELD
CHESHUNT
HERTFORDSHIRE

NEAR M25!

PHONE
0992 25640
(24 HRS)

VISA

have YOUR company included in this section

The Micro User gui

LEICESTERSHIRE

D.A. COMPUTERS LTD.

**FULL ACORN PRODUCT RANGE
COMPLETE AFTER SALES
SUPPORT AND SERVICE**

Wide range of Archimedes peripherals & software in stock

**105 London Road, Leicester
Leicestershire LE2 0PF
Tel: 0533 549407**

HERTFORDSHIRE

CANNON COMPUTING

**THE ONLY CHOICE FOR A FAST PERSONAL SERVICE
ACORN COMPUTERS' AUTHORISED DEALER**

At Cannon Computing, we pride ourselves on providing a full and comprehensive service to all our customers. Unlike many other dealers we supply almost everything that you could require for your computer system.

Of course we sell the Hardware, but we also stock Educational Software, Games Software, Business & Leisure Software, Peripherals, Upgrades, Add-ons and Consumables such as discs, cables, dust covers, printer ribbons, cables etc. etc.

Unlike most dealers, Cannon Computing are available 7 days a week, from 9am till 11pm Mon-Sat and 10am till 6pm Sunday to offer instant assistance to any of our customers – during evenings and weekends when most dealers are closed you can rely on us. We often find that customers prefer these times for us to demonstrate equipment and discuss their needs. We can also personally deliver and install any equipment at your premises - evening and weekend service is no trouble.

**CANNON COMPUTING
34/35 Rushleigh Green, Thorley Park, Bishop's Stortford, Herts CM23 4JH**
(Please quote: Micro User-L)
Tel: 0279 507727 or 0831 407652 (Mobile) Fax: 0279 508341
Callers by appointment

BEDFORDSHIRE

ADVANCED COMPUTER SERVICES

The area's only Acorn specialists

**Hardware ★ Software ★ Consumables ★ Spares
Servicing ★ Repairs ★ Peripherals**

FORTHCOMING PRODUCTS

1. !Label – Fully Multi-Tasking produces labels from any database
2. Business Accounting Program – details to be released
3. !Module 1 – Pupil Administration Package for GCSE Science

After sales service second to none

8 Frederick Street, Luton LU2 7QS
☎ (0582) 20604

KENT

COMPUTEREYES

16 Starnes Court, Union Street, Maidstone, Kent

Archimedes specialist for the Kent area

☎ **(0622) 751096**

CUMBRIA

KENDAL COMPUTER CENTRE LTD.

68 Stramongate, Kendal, Cumbria

Authorised Acorn Dealer
and Service Centre

ARCOUNTS MANAGER

Now available, a full featured Professional Accounts package for the Archimedes

(0539) 722559

SCOTLAND

THE COMPUTER DEPOT

205 BUCHANAN STREET
GLASGOW G1 2JZ
TEL: 041-332 3944

55 CLERK STREET
EDINBURGH EH8 9JQ
TEL: 031-668 4146

INSHOPS WELLGATE
CENTRE
DUNDEE DD1 2DB.
TEL: 0382 29653

Best display in Scotland of BBC and Archimedes

FREE installation of all upgrades

Excellent prices on printers, monitors, drives etc... Repairs to BBC machines

Scottish dealer for WATFORD ELECTRONICS

Service Dept. phone 041-332 0625

Licensed Credit Brokers

Mail Order Service

Contact Yvonne Benson on 0625 878888 now to

de to local dealers

LANCASHIRE

Lancashire Microcomputers Support & Sales

Authorised Acorn and Oak Dealer
Full range of Educational, Business & Games Software available for demonstration and sale
All computer systems come with full after sales support
Discounted prices for printers and peripherals when purchased with an Acorn System
Test Fly the new Acorn A400 series Learning Curve

Tel. (0704) 73600 Telefax (0704) 73601

Acorn

We also stock a full range of Commodore, Atari & IBM business and games software

42A Station Rd
Ainsdale
Southport
Lancashire
PR8 3HW

GREATER MANCHESTER

MICRO-TECH

Authorised Acorn Dealer for North Manchester

Full range of Acorn machines ex-stock
Vast stock of discs & ribbons for all popular computers/printers

☎ 061-797 6419

Fountain Street, off Bolton Road, Bury BL8 2NS

Moving soon to: 288 Walshaw Road, Bury BL8 1YP

WEST WALES

Cardigan Electronics

are your local dealers for everything

Acorn in the West Wales area

ACORN APPROVED DEALER SINCE THE "ATOM" IN 1981

Serving the districts of **ABERYSTWYTH, ABERAERON, CARMARTHEN, HAVERFORDWEST, PEMBROKE, MILFORD-HAVEN, TENBY, FISHGUARD Etc Etc.**

BBC MASTER, ARCHIMEDES & A3000 LEARNING CURVE ALWAYS ON DEMONSTRATION

DYFED'S LONGEST ESTABLISHED COMPUTER DEALER WITH FRIENDLY, HELPFUL STAFF. WE KEEP A WIDE RANGE OF SOFTWARE & PERIPHERALS ON THE SHELF AND OFFER UPGRADE & **REPAIR SERVICES** (Electron too.) * BBC TRADE-IN's AGAINST ARCHIMEDES & A3000 MODELS * OFFICIAL GOVERNMENT & **EDUCATION** ORDERS WELCOME. Call and see **"IMPRESSION"** on Demonstration

WE ALSO STOCK VARIOUS 8088, 286 & 386 PC-COMPATIBLES, SEMICONDUCTORS, ELECTRONIC COMPONENTS, STEPPING MOTORS, TEST EQUIPMENT, Etc, Etc, Etc...We are a **TANDY** dealer too.

CHANCERY LANE, CARDIGAN, DYFED SA43 1HD

VISA ☎ **0239 614483**

WE ARE JUST 3 MILES FROM THE SEA ON CARDIGAN BAY, AS FAR AS YOUR NEAREST TELEPHONE

ESSEX

Le Computer

the Essex Acorn Specialists

- **Education**
- **Special needs**
- **Aids for the disabled**
- **Teacher's scheme**

THE LEARNING CURVE

Specialist
Participating
Dealer
Acorn

Tel: (0245) 362225

GLOUCESTERSHIRE

AJL ELECTRONICS

BBC/MASTER/ARCHIMEDES
SPECIALIST

FULL RANGE OF SHERSTON EDUCATIONAL SOFTWARE IN STOCK – BBC/ARCHIMEDES S.A.E. FOR CATALOGUE
MICROVITEC TO ARCHIMEDES MONITOR CONVERSION **£30 + VAT**
(Retains contrast control!)
Fast repair service on Acorn equipment

Telephone: (0452) 311031
Fax: (0452) 309125

Telex: 94082034 (AJEL) G
24 HR ANSWER SERVICE

49 CALTON ROAD, GLOUCESTER GL1 5DZ

Specialists also in high performance satellite television systems
Members of The Confederation of Aerial Industries

BIRMINGHAM

DACO SYSTEMS

33a Westley Road, Acocks Green, Birmingham.

Your Birmingham Acorn, Tulip & Commodore Dealer.

· Special Needs · Business ·
· Education ·

Tel: 021-706 8933

have YOUR company included in this section

CARE ELECTRONICS

800 St. Albans Road, Garston, Watford, Herts. WD2 6NL
Tel: 0923 672102 Fax: 0923 662304

For your convinence first price Ex VAT, Second inc VAT

CARE MASTER SMART CARTRIDGE

At the press of a button halt any program running and execute any one of a host of useful built in, or user defined functionss and once completed will return to program and continue. Built in functions include – Tape to Disc, Screen Dump to Disc or Printer, Sound On/Off, Auto save and much more

	£30.00	£34.50c
Master battery backed RAM cartridges	£33.00	£37.95c

CARE MASTER ROM CARTRIDGES

For Interface and Spellmaster etc.

1. Dual cartridge takes 2 Rom	£10.00	£11.50c
2. Single Zif takes 2 Rom	£14.00	£16.10c
3. Dual Zif takes 2 Rom	£18.00	£20.70c
4. Quad Cartridge takes 4 Roms including double height type	£14.00	£16.10c
Morley AA (Internal) Rom Board	£40.00	£46.00d

BBC B ROM CARTRIDGE SYSTEM

BBC B Low Profile Rom System	£13.00	£14.95c
BBC B Spare Cartridges	£3.00	£3.45c

T-SHIRT PRINTING RIBBONS

Print onto normal computer paper or iron onto T-Shirt

Heat transfer ribbons black for Star LC10, Epson, FX80, FX100, LX80, Okidata, Citizen 120D, Panasonic 1080/81	£10.00	£11.50c
Star LC10 four colour	£15.00	£17.25
Heat transfer colour pens, five in a set	£15.00	£17.25

EPROM PROGRAMMER V2

Programs 8K, 16K, 32K CMOS or NMOS devices voltage selectable 21V or 12.5V. Complete with comprehensive software which includes Rom management system, plugs into the user port

	£30.00	£34.50d
Eprom Utilities Disc	£6.00	£6.90c
Eprom eraser with timer	£25.00	£28.75d

ARCHIMEDES SOFTWARE

NEW Medium resolution colour 15" FST. Full infra remote control teletext Tv/Monitor. Ideal for A3000, Archimedes or master computer £234,78 £270.00a

WORDALL (Archimedes)

Wordplay software package, ideal for crosswords, English students, education. Wordall includes: Crossword Compiler, Anagram Generator/Solver, Sentence Anagrams, Spelling Checker, Wordsquare Generator/Solver, Word in Word, Word Search with wild card facilities. Add to or build your own Dictionaries, Print out Crosswords, wordsquares, etc. Two dictionaries supplied, one a massive 110,000 words. The other has 50,000 and is aimed at crosswords. Please note Wordall requires a min. of 1 Meg Ram....£26.00 £29.90c

MORLEY TELETEXT ADAPTOR

Comes complete with 16K ATS Rom Manual and utilities Disc at the unbeatable price of £90.00 £103.50d

LABELMASTER PLUS

Now includes user definable Label sizes and Mailing list facility.

Labelmaster BBC B	£15.00	£17.25c
Labelmaster Plus for Master, Compact, Archimedes. Please state model when ordering	£17.35	£19.95c

PRINTER SWITCHERS

Two computers to one printer or vice versa	£20.00	£23.00b
Three computers to one printer or vice versa	£30.00	£34.50b
Four computers to one printer or vice versa	£36.00	£41.40b

Please note that the above units switch all lines, are suitable for all types of printers and computers using Centronics Parallel and INCLUDE LEAD

For advice or a quote on your installation please phone

User port switcher 2 to 1 & off	£25.00	£28.75d

CARE READY MADE LEADS RANGE

BBC/Master RGB-Euro (Scarf)	£9.00	£10.35c
BBC/Master RGB-7 Pin Hitachi	£7.00	£8.05c
BBC/Master RGB-7 Pin Ferguson	£7.00	£8.05c
Centronics to Centronics Printer	£11.00	£12.65c
User Port Extension lead 0.5M	£9.00	£10.35c
1MHz Bus Extension lead 0.3M	£10.00	£11.50c

Wide range of leads in stock – please phone

Government & Education orders welcome. How to Order: Enclose your cheque or P/Order made payable to CARE ELECTRONICS, Access or Visa welcome. Please allow 7 days for delivery.
Please add Post & Package – a=£11.50, b=£3.45, c=£1.38, d=£2.30

FACT SYSTEMS (BARROW) LTD

UNIT 19, FOCUS 303 BUSINESS CENTRE,
SOUTH WAY, WALWORTH INDUSTRIAL ESTATE,
ANDOVER, HANTS, SP10 5NY.

MASSIVE REDUCTIONS

Archimedes Specialists

A3000	£549
A3000 L-Curve	£629
410/1	£999
420/1	£1169
420/1 L-Curve	£1229
440/1	£1529
A540	£2995

Monitors

(price with computer)

Acorn Colour Monitor	£196
Philips CM8833 Colour	£239
Philips BM7502 Mono	£79
Taxan 775 Multiscan	£529

Accessories

400/1 1Mb RAM	£70
400/1 3Mb RAM	£205
400/1 2nd Floppy Drive	£115
A3000 1Mb RAM	£99
A3000 Serial upgrade	£19
A3000 Monitor Stand	£29
ROM Expansion Card	£41
Midi Expansion Card	£64
MIDI add-on to I/O	£28
A3000 User Port/Midi	£45

Art

Artisan 2	£47
Pro-Artisan	£79
Render Bender	£61

Languages

ISO Pascal	£79
Fortran 77	£79
ANSI 'C'	£119
Assembler	£159
ARC Basic Compiler	£73

Utilities

Soft Dev Toolbox	£159
Clares Toolkit Plus	£38
Instigator Sys Manager	£38
PC-Emulator	£89
Hearsay	£52
Genesis	£81
Twin	£28

Business

System Delta Plus v2	£52
Purchase, Sales, Nominal Stock Management, Order Pro/Invoice	£45 each
Mailshot	£29
1st Word Plus	£62
Pipedream 3	£127
Acorn DTP	£119
Impression Junior	£89
Impression2	£169
Tempest DTP	£105
Alpha Base	£38
Home Accounts	£35
Graphic Writer	£25

Books (no VAT)

RISC OS Prog Ref manual	£75
A3000 Techical Manual	£27
BBC Basic Guide	£19
Assembly Language	£14
Arc Operating System	£14
BASIC V: Guide	£9

Games

Alerion	£12
Alien Invasion	£12
All in Boxing	£12
Apocalypse	£25
Arcade Soccer	£17
Battle Tank	£12
Bug Hunter	£15
Casino	£16
Caverns	£15
Clares Arcade 3	£12
Conqueror	£21
E-Type	£16
Family Favourites	£16
Freddy's Folly	£12
Holed Out	£16
HoverBod	£12
IBIX the Viking	£16
Inertia	£16
Inter-Dictor	£30
Jet Fighter	£12
Maddingly Hall	£12
Man-At-Arms	£16
Missile Control	£12
Nevryon	£16
Orion	£12
Overload	£12
Talisman	£12
The Olympics	£16
ThunderMonk	£12
U.I.M.	£24
White Magic 1/2	£16
Zarch	£16

Please add VAT at 15%
Carriage:

Computers, Monitors	**£8**
Printers	**£8**
Medium items	**£4**
Minimum charge	**£2**

Printers

Star LC-10	£172
Star LC-10 Colour	£224
Star LC24-10	£258

Miscellaneous

10 - 3M 3.5" Discs	£14
ARC Scart monitor lead	£10

OPEN: MON - SAT
FREE PARKING - EASY ACCESS

VISA

ANDOVER (0264) 334811 Acorn
The choice of experience

ACCOUNTING PROGRAMS FROM APRICOTE STUDIOS

THE ACCOUNT BOOK V3 Comprehensive small business accounts to trial balance. VAT approved. Absolutely the EASIEST program to use, with neat final books AND full reports and audit trails. Unlimited entries. Automatic date order. Complete editing of all entries AT ANY TIME. Includes new VAT Return form (Jan. 1990). *"The Account Book gets first prize for both price and performance"*– Comparison of different accounts programs in Micro User, July '89. *"A true user-friendly program. It succeeds admirably"* – Beebug, October '88. *"An easy to use system"* – A&B Computing, August '89. *"I am very impressed with these programs. These are programs for any small business."* – Beebug, December '89. **£34.95 inc.**

THE INVOICE PROGRAM V2 Includes 700 customer database which keeps track of up to 2,500 unpaid invoices. VAT rates can be mixed (the VAT section can be turned off if you are not VAT registered) and there are almost no description length limits. Calculates quantities including fractions. 100 stock presets for regular items. Links directly to The Account Book's sales ledger or can be used independently. Automatically produced invoices and statements ready to be popped into window envelopes. Also prints labels for mail shots or even direct envelope addressing. Prints debtor lists including telephone numbers and instant database access to individual customers credit details. *"If you buy these programs you will not be disappointed"* Beebug, December '89. Judging by the letters of thanks we have received, our customers agree. **£34.95 inc.**

Special offer: The Account Book + Invoice Program **£59.95 inc.** Requires dot-matrix printer. State 40 or 80 tracks if using a BBC B or Master.

JUST RELEASED: PERSONAL ACCOUNTS A brand new program to keep track of all your personal income and expenditure. 48 user-defined income and payment headings with instant access to all the heading totals. 20 standing orders or direct debits. 10 bank/building society/credit card accounts with not only the opening balances but also the current balances and balance total. The easiest to use accounting system of all with the ultimate on screen editing facilities (even the previous cursor positions are remembered when you re-load a file). Bank reconciliation with look-a-like account statements to spot errors made by your bank etc. Full report printing and searching facilities including not only your entries but income/payment headings, bank accounts, standing orders and all their totals. Load, save and create new files from existing ones including the carrying forward of balances. Absolutely everything you need if you want to keep track of your finances. Runs on all disc drive and printer configurations. As above "You will not be disappointed", return within 10 days for a full refund if you don't agree. Just **£18.95 inc. Archimedes Special Edition £28.95.**
All the above programs are available now by return of post for the BBC B, B+, Compact, Master, A3000 and Archimedes (inc. Risc OS). Please state computer/disc size when ordering. Thank you.

Access

APRICOTE STUDIOS
2 Purls Bridge Farm
Manea, Cambs, PE15 0ND
Tel: 035 478 432 for information, help or to order

VISA

CANNON COMPUTING

– THE ONLY CHOICE FOR FAST PERSONAL SERVICE

WE ARE OPERATING THE

TEST FLIGHT

FLYING COMPETITION

Acorn COMPUTERS' AUTHORISED DEALER

ARCHIMEDES: EASY TO USE NO LIMIT TO CAPABILITY

Archimedes: The ONE computer for all walks of life and ages: Business (including IBM), Education, Graphics, Health, Music, Art, CAD, DTP, WP and Games.

Archimedes features: 32-bit RISC Architecture for high speed, enhanced RISC-OS window environment, low cost, multi-tasking, MS_DOS and UNIX compatibility.

Cannon Computing is one of Acorn's top dealers. All your required computer products and queries can be solved by us as your stockist, repairer and Econet Network approved supplier and installer.

Unlike most dealers Cannon Computing are available 7 days a week, from 9am till 11pm Mon-Sat and 10am till 6pm Sunday to offer instant assistance to any of **our** customers – during evenings and weekends when most dealers are closed you can rely on us. We often find that customers prefer these times for us to demonstrate equipment and discuss their needs. We can also personally deliver and install any purchased equipment at your premises – evening and weekend service is no trouble.

For urgent orders we offer a **SAME DAY DELIVERY SERVICE** subject to location and order time – most orders despatched same day – subject to stock availability.

We stock the complete range of Acorn computers: BBC A3000s, A3000 Learning Curve pack, Archimedes 410/1, 420/1 **and the new 420/1 Learning Curve complete with Acorn DTP,** 440/1s and the **New Flagship Archimedes 540 with 4Mb-16Mb RAM + ARM3 Turbo chip + 100Mb SCSI HD + VGA/SVGA.** Monitors, disc drives, printers, upgrades and accessories are always in stock together with consumables and all types of software. Phone now for brochures and **LOWER 400/1 prices** –
QUANTITY AND EDUCATIONAL DISCOUNTS.

FOR THE BEST BEFORE-SALES GUIDANCE AND AFTER-SALES CARE CONTACT:

CANNON COMPUTING
34/35 RUSHLEIGH GREEN, THORLEY PARK, BISHOP'S STORTFORD, HERTS, CM23 4JH
(Please quote: MicroUser-Q)

TEL: 0279-507727 or 0831-407652 (mobile)
FACSIMILE: 0279 508341

FINANCE ON ARCHIMEDES – CANNON COMPUTING IS A LICENSED CREDIT BROKER

Callers by appointment

VISA

Acorn Better solutions.

Phone Now for Brochure! 061-789 4120

Program on Disk for BBC B, B+, Compact and Master

SQUIRREL SOFTWARE

The **CARES DISK** comprising all four Cares utilities **£29.95**

INVESTMENT CARE PLUS
Keeps track of all UNIT TRUSTS, SHARES etc. Produces displays & printouts of Capital Gains, Dividends. Current Holdings valuations showing Quantities. Bid/Offer prices. Values. Gains/Losses. APR. HiVal % etc, and a 3D BAR CHART program with a disk search procedure to collect past data.

CASH CARE
Bank account AND Savings account. Full Analysis – 60 categories. Budget Forecasts. 3-D Bar Charts. Password Protection. Easy storage of data. Printouts of all accounts and Bar Charts.

BUILDING SOCIETY CARE
Checks the complex interest calculations involved on a day to day basis. Shows interest earned to date. Spreadsheet display. Easy storage of data. Printout of account to date.

VAT CARE
225 Sales AND 225 Purchases each month (BBC). Three month period. ALERT warning if VAT 2% or more incorrect. Easy storage of data. Printout with month & 3 monthly totals.

TV DIRECTOR – popular in schools and colleges
Make your own video without cameras! **£19.95**

THE GAMES DISK – A COMPILATION
Supergolf – Trafalgar – Bunfun (BBC-B version also includes Polar Perils) **£19.95**

PROGRAMS FOR ARCHIMEDES

THE CARES DISK – Much improved version of above **£34.95**

SUPERGOLF – ***NEW VERSION*** – Fully mouse driven. Three 18-hole courses. Plus Golf Course Designer **£19.95**

WORDSQUARE – Crossword compiler with a 72000 + wordbank – can complete a 15 x 15 square in less than 60 seconds! Full printout facilities to produce professional looking crosswords **£39.95**

PLEASE FORWARD ME .... 40TK☐ 80TK☐ 3.5☐
I HAVE A BBC-B☐ BBC B+☐ COMPACT☐ ARCHIMEDES☐ MASTER☐
DEBIT MY CREDIT CARD No. ....
OR ENCLOSED £.................... SIGNATURE....................
ADDRESS ....
....

VISA **Dept MU12, 4 Bindloss Avenue, Eccles, Manchester M30 0DU**
Most credit cards accepted

GRAND SALE FOR BBC-B & MASTER

THE RUNEMAGIC SERIES

Adventure One - WAS £6.95 (including character gen) **NOW £1.99**
Adventure Two - WAS £6.95 **NOW £1.99**
or both for **£2.99** - p&p FREE

Cheque to: 'Saloway', 12 Cullwood Lane,
Ashley, New Milton, Hants BH25 5QJ

ROOM 7 SOFTWARE

LIBRABASE **LIBRARY BOOK DATABASE** **£11.95** **MASTER/COMPACT ADFS ONLY**	**FOOD ANALYSIS** **£10.35**	**ELECTRONIC HOBBYIST** **£29.99**
SOCCER BOSS **£3.99**	**POOLS CHEQUE** **£5.95**	**EASY BANKER** **£8.50**

NOW AVAILABLE FOR ARCHIMEDES AND A-3000

Most of our programs are available for the Electron/BBC B/B+/MASTER, COMPACT and ARCHIMEDES range on 5.25" and 3.5" discs.

Also covered by our catalogue - Investment Analyser 2, Super!boot, Easy Banker, Introduction to Statistics, Matrix, Soccer Boss, Pools Cheque, Pocket Engineer, Central Heating Calculator, Electrical Cable Selector, AND NEW FOOD ANALYSIS PROGRAM.

Letters/ cheques to: W.L. Computer Services, Dept. 4,
First floor, H.S.L. Building, 437 Warrington Road, Rainhill,
Merseyside L35 4LL. Tel. 051-426 7400. FAX.051-493 1425

VISA

MAKE YOUR MICRO EARN!

Yes making money with your micro becomes incidental when you know how. Your micro is, if only you knew it, a gold mine. The size and make is irrelevant. Make the initial effort. **NOW** by starting your own **HOME BASED BUSINESS.**

This may be the most important move you will ever make!

REMEMBER: You'll never get rich by digging someone else's "ditch". Anyone in the country, including **YOU**, can become very rich in a relatively short period of time just by doing a few basic things! It's more rewarding than playing games. The benefits are many and varied, Full or part time. For FREE details send S.A.E. to:

HOME BASED BUSINESS

31 PILTON PLACE (MU12)
KING AND QUEEN STREET
WALWORTH, LONDON SE17 1DR

ONLY POOLS AND HORSES

FOOTBALL BOXFORM £15.95 cass £17.95 disk

Not a gimmicky plaything but a genuine statistical analysis of football form the sole objective of which is to improve the chances of winning on the pools or fixed odds. **Written by a pools expert the program has forecast over 50% more draws than would be expected by chance.** Homes, aways & draws are shown in order of merit and true odds given for every match. Merit tables show at a glance the teams currently in form and those having a lean spell. Separate AUSTRALIAN POOLS program included in the price.

POOLS PLANNER £15.95 cass £17.95 disk

The perm book on a computer. Gives details of and checks 369 easy to enter block perms ranging from 9 to 73960 lines and from 12 to 56 selections.

RACING BOXFORM & HANDICAP WINNER £15.95 cass £17.95 disk

Two programs for the price of one. **BOXFORM** weighs up a race by considering the many facets of form. Easily amended to suit the user's ideas. **HANDICAP WINNER** shows the value for money bets. Over 1,000 winners every year and ON DERBY DAY 1990 THE PROGRAM GAVE THE WINNERS OF 7 OUT OF 9 HANDICAPS. 20/1 10/1 7/1 11/2 4/1 4/1 6/4. **PROBABLY THE BEST DAY'S RESULTS EVER ACHIEVED, WITH OR WITHOUT A COMPUTER**

SPECIAL OFFERS: Any 2 of the above £25.95 or £35.95 for all 3 (+ £5 for discs in either case). Both offers include **FREE** program to work out almost any bet. So good it's used by bookies.

VISA

Why pay inflated prices? **BOX**oft **CLEVER – GET THE BEST**
Advertised for five years in the sporting and computer press
BOXOFT (MU), 65 Allans Meadow
Neston, South Wirral, L64 9SQ
Cheque/P.O./Access/Visa. TEL; 051-336-2668 (24 hrs)

Available for BBC B. Amstrad CPC, Commodore 64/128 and Spectrums

If you are new to the Archimedes and A3000

!Help is at hand!

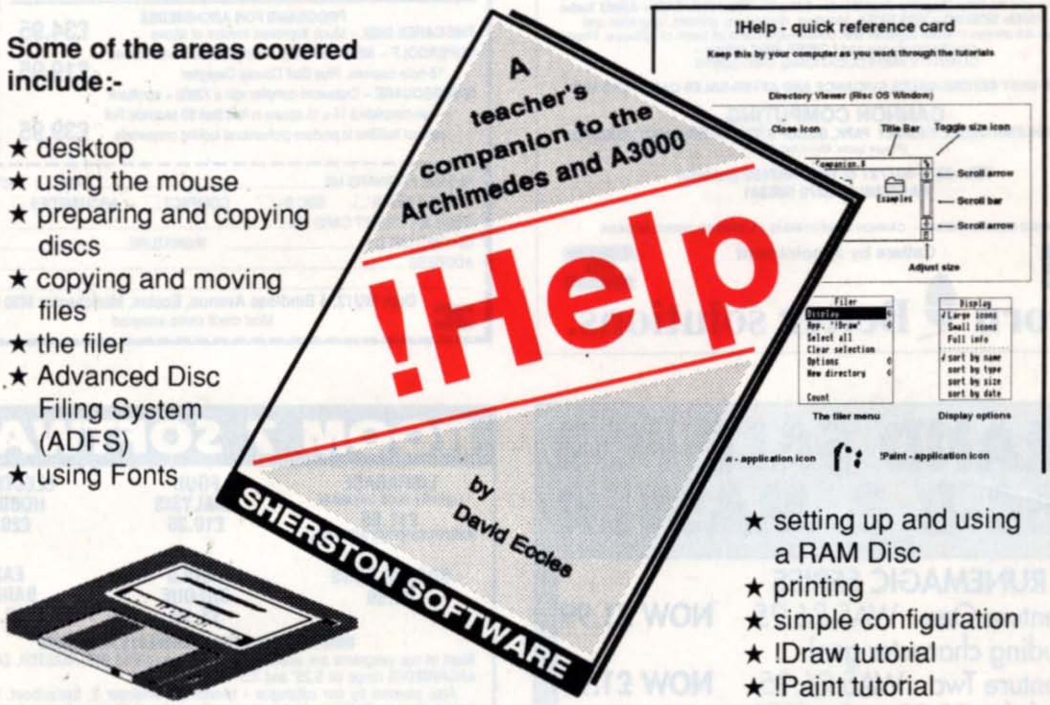
A teacher's (and anyone else's) companion

!Help is a simple, easy to follow, book for anyone who has neither the time nor the inclination to read computer manuals. !Help explains very simply how to get started with the computer and how to make the most of some of its very powerful features.

Accompanied by a tutorial disc full of useful examples and exercises!

Some of the areas covered include:-

★ desktop
★ using the mouse
★ preparing and copying discs
★ copying and moving files
★ the filer
★ Advanced Disc Filing System (ADFS)
★ using Fonts


A teacher's companion to the Archimedes and A3000
!Help
by David Eccles
SHERSTON SOFTWARE
!Help - quick reference card
Keep this by your computer as you work through the tutorials
Directory Viewer (Risc OS Window)
Close icon
Title Bar
Toggle size icon
Scroll arrow
Scroll bar
Scroll arrow
Examples
Adjust size
Filer
Display
App. '!Draw'
Select all
Clear selection
Options
New directory
Count
The filer menu
Display
Large icons
Small icons
Full info
sort by name
sort by type
sort by size
sort by date
Display options
application icon
!Paint - application icon

★ setting up and using a RAM Disc
★ printing
★ simple configuration
★ !Draw tutorial
★ !Paint tutorial
★ lots of hints and tips

What the Press say .....

" an extremely useful guide ... easy to get to grips with ..." *Micro User October 1990*

" ... manages to explain everything that anyone new to the A3000 needs to know in a simple and straight forward way." *Educational Computing September 1990*

"simple no nonsense style ... I warmly recommend it to all." *Archive September 1990*

Only £7.95 from

Sherston Software, Dept H, Swan Barton, Sherston,
Malmesbury, Wiltshire, SN16 0LH. Tel: 0666 840433
Please make cheques payable to Sherston Software

RETURN THE COUPON FOR FREE BROCHURES!

NEW! - AMIGA PACK

Commodore
AMIGA 500
Flight of Fantasy
DELUXE Paint II
RETALIATOR
ESCAPE FROM THE PLANET OF THE ROBOT MONSTERS
TENGEN
RAINBOW ISLANDS
ocean

Commodore A500 Flight Of Fantasy

£399 INC VAT

A500 BATMAN PACK

Commodore AMIGA 500
BATMAN PACK

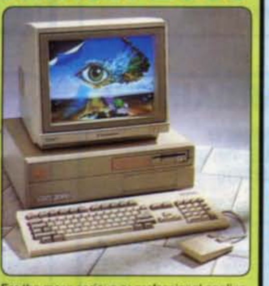
The Commodore A500 Batman Pack must surely rank as one of the most popular computer packs ever! The pack features the **Commodore Amiga 500 computer** with **mouse controller** and **TV modulator**, plus four top software titles. The software includes: '**Batman The Movie**' - Rid Gotham City of the cunning joker, in Ocean's top selling title based on the blockbuster Batman film; **New Zealand Story** - high quality conversion of the leading arcade game; **Interceptor** - Dogfight with two F-16's in this leading flight simulator; **Deluxe Paint II** - top quality Amiga graphics package which set the standard for others to follow. Return the coupon for further details.

PACK INCLUDES:

A500 Computer & Mouse	£399.99
A520 TV Modulator	£24.99
Batman The Movie	£24.95
New Zealand Story	£24.95
Interceptor	£24.95
Deluxe Paint II	£49.95
TOTAL RRP:	£549.78
Less Pack Saving:	£150.78
PACK PRICE:	**£399.00**

£399 INC VAT

AMIGA 2000



For the more serious or professional applications user, Commodore have a selection of systems based around the expandable Amiga 2000, at prices from £1295+VAT. The A2000 features a full 1Mb RAM (expandable to 9Mb), 9 system expansion slots, plus IBM compatibility with the use of PC-XT or PC-AT bridgeboards. Complete and return the coupon, putting a tick in the A2000 box, for details of A2000 computer systems.

£1295 +VAT= £1489.25

FLIGHT OF FANTASY

Flight of Fantasy is the very latest Amiga 500 pack from Commodore, featuring BRAND NEW software releases, to make this the most spectacular A500 pack ever! The pack features the Amiga 500 computer with mouse controller and TV modulator, as well as four top software titles. These include the following:

DELUXE PAINT II:

The high quality graphics program that set the standard for other Amiga art packages. Deluxe Paint II includes powerful, easy to use tools that bring out the artist in you. Create masterpieces, presentations, 3D perspectives or just doodle.

ESCAPE / ROBOT MONSTERS:

Here's something completely different - a science fiction story with comic book style graphics. Our heroes Jake and Duke are on the Planet X rescuing Humans who have been captured by the Robot Monsters and forced to create an evil Robot Army to DESTROY EARTH! Jake and Duke fight their way through hordes of evil Robots to help the Humans escape.

RAINBOW ISLANDS:

Slip on your magic shoes, practise throwing a rainbow and you're ready to go island hopping. From the Island of Doh to Monster Island, you will encounter Doh himself, stinging insects, lethal combat machines, mechanical assailants, the formidable beings of legend and folklore. Finally enter the world of darkness and its inhabitants.

F29 RETALIATOR:

The ultimate in flight simulation with a choice of two aircraft and four battle environments with dozens of different tactical missions. Aerial combat, strategic bombings, interactive ground based battles, seagoing carriers ... the list of features is endless. Real time cockpit displays, including 'true radar' enhance the realistic feel of this stunning simulation.

PACK INCLUDES:

A500 Computer & Mouse	£399.99
A520 TV Modulator	£24.99
Deluxe Paint II	£49.95
Escape/Robot Monsters	£19.99
Rainbow Islands	£24.95
F29 Retaliator	£24.95
TOTAL RRP:	£544.82
Less Pack Saving:	£145.82
PACK PRICE:	**£399.00**

£399 INC VAT

FOR FURTHER DETAILS OF THE AMIGA RANGE, COMPLETE THE COUPON AND RETURN IT TO SILICA SHOP

THE UK's No1 AMIGA SPECIALISTS

SILICA SHOP OFFER YOU

FREE OVERNIGHT COURIER DELIVERY: On all hardware orders shipped in the UK.
TECHNICAL SUPPORT HELPLINE: Team of Amiga technical experts at your service.
PRICE MATCH: We normally match competitors on a "Same product - Same price" basis.
ESTABLISHED 12 YEARS: Proven track record in professional computer sales.
£13M TURNOVER (with 60 staff): Solid and reliable with maintained growth.
BUSINESS/EDUCATION/GOVERNMENT: Volume discounts available for large orders.
SHOWROOMS: Demonstration and training facilities at our London & Sidcup branches.
THE FULL STOCK RANGE: All of your Amiga requirements from one supplier.
FREE CATALOGUES: Will be mailed to you with offers and software/peripheral details.
PAYMENT: By cash, cheque and all major credit cards.
CREDIT PAYMENT TERMS: Silica are licensed credit brokers - return coupon for details.

Before you decide when to buy your new Amiga computer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Amiga, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new products? At Silica Shop, we ensure that you will have nothing to worry about. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest Free literature and begin to experience the "Silica Shop Service".

RETURN THE COUPON NOW FOR **FREE BROCHURES**

SILICA SHOP

MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-309 1111**
Order Lines Open: Mon-Sat 9.00am-6.00pm No Late Night Opening Fax No: 081-308 0608

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA **Tel: 071-580 4000**
Opening Hours: Mon-Sat 9.30am-6.00pm Late Night: Thursday until 8pm Fax No: 071-323 4737

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-302 8811**
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm Fax No: 081-309 0017

BUSINESS/EDUCATION: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX **Tel: 081-308 0888**
Order Lines Open: Mon-Fri 9.00am-6.00pm Closed on Saturdays Fax No: 081-308 0608

To: Silica Shop, Dept MUSER-12.90-32, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND INFORMATION ON THE AMIGA

Mr/Mrs/Ms: .... Initials: .... Surname: ....

Address: ....

....

....

Postcode: .... Tel: ....

Which computer(s), if any, do you own? .... A2000 ☐

E&OE - Advertised prices and specifications may change - please return the coupon for the latest information.

BeebPC(Basic) IBM PC Software
BBC to IBM Basic Translator

BeebPC(Basic) provides a fast professional method of converting BBC BASIC programs for use with IBM PC BASICA, GWBASIC, QUICKBASIC and TURBO BASIC languages. To convert programs manually can waste days of valuable time with every occurrence of common statements such as: PROC, DEFPROC, TAB, having to be changed. BeebPC(Basic) automates these changes by converting the majority of BBC statements into equivalent acceptable IBM BASIC statements. Also BBC BASIC data files can be converted to IBM BASIC format, with support for all BBC data formats: INTEGER, REAL & STRING.
Before using BeebPC(Basic), BBC BASIC programs and data files must be transferred to IBM disk. This can be achieved using our powerful BeebDOS BBC/IBM file transfer software for the IBM PC.
Prices (inclusive of £1.00 p&p and 15% VAT): BeebPC(Basic) £46.00, BeebDOS £52.90, BeebPC(Basic) and BeebDOS combined £81.65.

For our detailed information sheet or to order by
Cheque, Access or VISA contact:
MICROBOSS LTD 3 HADLEIGH RD FRINTON
ESSEX CO 13 9HG TEL (0255) 671095

The convenient SINGLE SOURCE for
Educational Software

- All popular educational programs at publishers prices or below including Mirrorsoft, 4Mation, Sherston, E.S.M., Bourne, Chalksoft, Kosmos, Database Fun School, etc.
- Wide range of formats: Not only BBC/A3000/ Electron but also Spectrum +2/+3, Amstrad, Nimbus, Commodore 64/Amiga, Atari ST, IBM-PC and others!
- Vast stocks: 30,000 programs available for immediate delivery.
- Unconditional guarantee: problems rectified by expert staff – telephone helpline also available.

THE EDUCATIONAL SOFTWARE DIRECTORY
describes and prices hundreds of programs

Write or phone for a free copy
RICKITT EDUCATIONAL MEDIA
FREEPOST • Ilton • Ilminster • Somerset TA19 9HS •
Telephone 0460 57152 • Fax 0460 53176
Please state the age of your children and make of your computer

ADVERTISERS' INDEX

Abbco 115
Ace Computing 42
Acorn 26
Advanced Computer Services 140
AJL Electronics 141
AI Systems 138
Apricot Studios 142
Arnor 33
Automatic Seryices 138
Beebug 6, 8, 11, 12, 13
Boxsoft 143
B&S Computing 34
Cannon Computing 140, 143
Cambridge International Software 131
Cardigan Electronics 141
Care Electronics 142
Chelsfield Publications 114
City Desk 120
CJ Computing 139
CJE 99
Clares Micro 63, 93
Computaccount UK 124
Computereyes 140
Computer Concepts 38, 39, 40, 41, 49
Computer Depot 140
Computer Focus 92
Computer Shopper Show 50, 51
Computer Tutorial Services 138
Computeck 46
Comlex 146
Contex 115
Craddock Computer Systems 139
CSS Computer Centre 146
Dabhand Computing 70, 71
DA Computers 140
Daco Systems 141
Datastore 92
Diamond Computer Systems 116
Diamond PD 115
Eclipse 66
Electric Font Foundry 114
EMR 58
Fact Systems 142
Fourth Dimension 18, 19, 82, 83, 86, 87, 147
GA Computers 138
Home Based Business 143
Integrex 129
Jaffa 114
JR Lectronics 138
Kendal Computer Centre 140
Kosmos 115
Lancashire Micros 141
Le Computer 141
Lee Microcomputer 139
Lighthouse Software 114
Mauden Sales 139
MD Office Supplies 128
Micro Aid 126
Microboss 146
Microfix 52
Microtech 141
Minerva 14, 55
Morley Electronics 22, 23
Norwich Computer Services 120
N. Saloway 143
Orion Computers 78, 79
Pineapple 28
PRES 27, 29
Rickett Educational Software 146
Seriel Port 20, 91
Sherston 144
Silica Shop 121, 145
Silicon Vision 2
Simtron 52
Software Bargains 98
Special Reserve 62
Squirrel Software 143
Superior Software OBC
Techsoft 42
T.M.J. Computer Software 146
Universal Computer Support 126
Vipray 139
Voltmace 52
Watford Electronics 3, 100-113
WeServe 92
Willow Software 131
WL Electronic 143
Yarm Computers 138

!!!! EVERYTHING'S A BARGAIN !!!!

T.M.J. Computer Software
39 Farmstead Road, Corby, Northants. NN18 0LE. Tel: 0536 69011
Electronic BB:DARKHAVEN 0604 413716

Product	Price	Product	Price
Man at Arms	£16.99	Hearsay	£54.95
Inertia	£16.99	Hostage	£15.95
Apocalypse	£25.99	PC Emulator	£106.99
Nevryon	£16.99	Impression 2	£154.95
The Olympics	£16.99	Home Account	£35.95
U.I.M.	£25.99	Trivial Pursuit	£23.75
E-Type	£16.99	Man. U. Football	£20.99
E-Type Designer	£14.99	Superior Golf	£16.95
Arcade Soccer	£16.99	The Real McCoy	£25.50
Tempest	£119.95	Drop Ship	£16.95
White Magic 2	£16.99	Pysanki	£16.95
Holed Out	£16.99	Pipe Mania	£20.50
Holed Out 1 & 2	£14.99	Memory Magic	£13.50
Interdictor 1 & 2	£29.95	Sporting Triangles	£20.50

If any item you require does not appear on the list please ring and I will endeavour to get it.
Please send S.A.E. for full price list. Visa or Access welcome.
**** All prices are inclusive of VAT and POSTAGE ****

COMLEX

75 CROSS STREET
SALE
CHESHIRE

TEL: (061)-976-3763
(0455)-612139

ACORN ARCHIMEDES

A3000	**£529**	Philips 8833 Monitor (Stereo)	**£195**
A420/1	**£1199**	COMLEX 286-16MG 40 Meg Hard Disk 1 Meg Memory 1.2 Floppy Mono Monitor	**£649**
A410/1	**£949**		
A440/1	**£1449**		
A540 Phone availability	**£2499**	COMLEX 386-25MG 40 Meg Hard Disk 1 Meg Memory 1.2 Floppy Mono Monitor	**£1249**
A300 Learning Curve	**£629**		
Acorn Monitor (Mono)	**£199**		

AMIGA

Amiga 500 Batman Pack	**£329**	Screen Gem Pack	**£329**
Amiga Class of the 90's	**£499**	Flight of Fantasy	**£329**
Amiga Medium Res. Colour Monitor Mono Sound	**£190**	Amiga Medium Stereo Monitor	**£225**

ATARI

520ST Discovery Pack	**£245**	1040STE Extra Pack	**£399**
Atari 520ST Power Pack	**£319**	Atari Medium Res. Colour Monitor	**£231**
520STE Turbo Pack	**£329**		
Atari 520STFM Explorer Pack	**£240**	Philips 14" RGB Composit Monitor	**£220**
Atari 1040ST 1Mb of Ram	**£399**		

Colour Monitor with 520ST **£189** without **£229**
Mono Monitor with 1040ST **£85** without **£129**

SPECIAL PRINTER OFFERS

Citizen 120D	**£109**	Epson LQ55	**£255**	Panasonic 1180	**£169**
Citizen Swift	**£159**	HP Deskjet	**£399**	Panasonic 1124	**£229**
Citizen 120 4D	**£195**	HP Deskjet +	**£449**	Star LC10	**£139**
Epson LX80	**£189**	HP Deskjet 500	**£425**	Star LC10 Colour	**£159**
Epson LQ550	**£255**	HP Paintjet	**£749**	Star 24/10	**£229**
Epson LX400	**£125**	M'mann Tally MT81	**£109**	Seikosha 200	**£129**
Epson LX850	**£185**	Panasonic 1081	**£149**	Seikosha SL92	**£229**

For other printers not listed we have a large range of machines including:-
Tandon, Amstrad, Gold Star, Roland, Toshiba, Wyse
PHONE FOR PRICES!
ALL PRICES ARE EXCLUSIVE OF VAT
If there is anything you require that is not on this list then please do not hesitate to call us as we can probably supply the items you require

FREE support with all our systems

*Expert advice! on system purchase
*Expert help! on using your system
*Expert backup! software support and hardware servicing
*Leasing facilities now available

Consult the experts!

CSS Computer Centre
Unit 3A Townfoot Ind. Est. BRAMPTON
CUMBRIA CA8 1SW
☎ 06977 3779
Acorn Qualified dealers and Unix centre
Authorised SJ Networks, installer *Education specialists
Government plc and education orders welcome

BRITISH BROADCASTING CORPORATION MASTER SERIES MICROCOMPUTER
Acorn
The choice of experience
SJ
RESEARCH

IMPACT SOFTWARE

A3000 & ARCHIMEDES GAMES

ALL the following games are compatible with the BBC A3000 & Archimedes 310 and 400 Series.

Powerband (4th Dimension)	*24.95
The Wimp Game (4th Dimension)	19.95
Break 147 (4th Dimension)	*24.95
Superpool (4th Dimension)	**19.95
Chocks Away (4th Dimension)	24.95
The Real McCoy (4th Dimension)	29.95
Drop Ship (4th Dimension)	19.95
Pysanki (4th Dimension)	19.95
Man-At-Arms (4th Dimension)	19.95
Inertia (4th Dimension)	19.95
Apocalypse (4th Dimension)	29.95
Nevryon (4th Dimension)	19.95
The Olympics (4th Dimension)	19.95
UIM (4th Dimension)	29.95
E-Type (4th Dimension)	19.95
E-Type Designer (4th Dimension)	16.95
E-Type Extra 100 Miles (4th Dimension)	16.95
Arcade Soccer (4th Dimension)	19.95
White Magic (4th Dimension)	19.95
White Magic 2 (4th Dimension)	19.95
Holed Out (4th Dimension)	19.95
Holed Out Extra 1 (4th Dimension)	16.95
Holed Out Extra 2 (4th Dimension)	16.95
Holed Out Designer (4th Dimension)	19.95
Quazer (Impact Software)	11.95
Corruption (Magnetic Scrolls)	29.95
The Pawn (Magnetic Scrolls)	29.95
Guild Of Thieves (Magnetic Scrolls)	29.95

* = Expected release date late November '90

** = Expected release date mid December '90

BBC MICRO, MASTER SERIES AND ELECTRON GAMES

All BBC games below are compatible with the BBC B. If the game is followed by an "M" it is also compatible with the BBC B+ and Master series computers.

TITLE & PUBLISHER	BBC OR ELECTRON CASSETTE	BBC 5 1/4" DISC	MASTER COMPACT 3.5" DISC
THE FOURTH DIMENSION			
E-Type M	9.95	14.95	15.95
Inertia M	9.95	12.95	13.95
Nevryon M	-	14.95	15.95
UIM (Disc only BBC B or B+ with Sideways RAM and Master Series)	-	19.95	21.95
White Magic M	9.95	12.95	13.95
White Magic 2 M	9.95	12.95	13.95
Holed Out M	12.95	14.95	15.95
Holed Out Extra 1 M	9.95	11.95	12.95
Holed Out Extra 2 M	9.95	11.95	12.95
Arcade Soccer M	9.95	12.95	13.95
IMPACT SOFTWARE			
The Art Studio M	9.95	12.95	-
Orbital M	4.95	5.95	6.95
Zenon M	4.95	4.99	-
Clogger M	4.95	4.99	6.95
Cheat It Again, Joe 1	2.99	4.99	-
Cheat It Again, Joe 2	2.99	4.99	-
Cheat It Again, Joe 3	2.99	4.99	-
ELITE			
Paperboy M		11.95	-
SUPERIOR			
Repton Infinity M	8.95	-	-
Play It Again, Sam 4 M	6.95	-	-
Play It Again, Sam 5 (BBC Only) M	6.95	9.50	-
Play It Again, Sam 9 (BBC Only) M	6.95	-	-
Play It Again, Sam 10 M	6.95	-	-
Predator (BBC only) M	6.95	-	-
The Life of Repton (BBC Only)M	4.95	-	-
GODAX			
Skirmish M	4.95	-	6.95
Kourtyard M	5.95	6.95	-
ACORNSOFT			
Aviator (BBC B Only)	3.99	-	-
Revs & Revs 4 Tracks (BBC B Only)	3.99	-	-
Boxer (Elec Only)	2.99	-	-
Snooker (BBC B Only)	2.99	-	-
Starship Command (Elec Only)	2.99	-	-
ARDVAARK			
Zalaga (Elec Only)	4.95	-	-
ASL			
Thunderstruck	4.95	-	-
Omega Orb M	-	5.95	
BEAU JOLLY			
Five Star 1 (5 Games)	3.99	-	-
Five Star 2 (5 Games) (BBC Only)	3.99	-	-
Comp Hits 2 (10 Games) (BBC Only)	3.99	-	-
Comp Hits 3 (10 Games) (Elec Only)	4.95	-	-
Comp Hits 5 (5 Games)	3.99	-	-
CDS			
Steve Davis Snooker M	2.99	4.99	-
DATABASE			
Mini Office 2 (BBC B Only)	12.95	14.95	-
Mini Office 2 (Master Disc)		15.95	

M = MASTER COMPATIBLE

TITLE & PUBLISHER	BBC OR ELECTRON CASSETTE	BBC 5 1/4" DISC
DOCTORSOFT		
Phantom Combat M	4.95	7.95
DOMARK		
Not A Penny More (BBC Only) M	6.95	6.95
Star Wars M	-	7.95
Trivial Pursuits (All BBC Only)		
New Beginning M	12.95	-
Genus Edition M	6.95	9.95
Young Players M	6.95	7.95
Baby Boomer M	6.95	7.95
GREMLIN GRAPHICS		
Krakout	-	7.95
INCENTIVE		
Moon Cresta	-	4.99
LEISURE GENIUS		
Monopoly	-	9.95
MANDARIN		
Icarus M	4.95	9.95
MARTECH		
War	-	3.99
MASTER GAMES		
Scott Adams Scoops (BBC Only)	6.95	-
MICROPOWER		
Micropower Magic 2 (BBC Only)	4.95	-
MIRRORSOFT		
Mastermind & Quizmaster	2.99	-
Tetris M	2.99	4.99
Spitfire 40 M	5.95	-
MOSAIC		
Yes Prime Minister M	7.95	-
ROBICO		
Rick Hanson Trilogy (BBC Only) M	17.95	-
Enthar 7 M	-	16.95
The Hunt M	-	11.95
Blood Of The Mutineers M	11.95	13.95
US GOLD		
Beachhead (BBC Only)	-	7.95
Kayleth	7.95	9.95
Crystal Castles (BBC Only)	6.95	-
BUDGET TITLES (All 2.99 Each) BBC B or Electron Cassettes		
Demolators		
Dunjunz		
Grid Iron		
Megarock		
Microball		
Plan B		
Plan B2		
Styx		
Uranians		
Warehouse		
Wet Zone		

M = MASTER COMPATIBLE

GRAB A BARGAIN!!

Come and meet us in person at this terrific Xmas Micro show. See the ***NEW RELEASES*** *and try them out for yourself.*

COMPUTER SHOPPER SHOW

Stand J8, The Exhibition Hall & Thames Suite, Wembley,
Empire Way, Wembley, London

6th-9th December 1990

STOP PRESS...

POWERBAND

This eagerly awaited new game from Gordon Key is expected to be released mid to late November. Powerband is a 3 dimensional vector graphic Formula One racing simulation using routines almost twice as fast as the unanimously acclaimed Apocalypse. Powerband will feature full racing circuits with hairpin bends, chicanes, roadside scenery and much more. Highly recommended.

THE WIMP GAME

A brilliant pointer driven graphic adventure celebrating over 10 years of Acorn Home Computers. This revolutionary multi-tasking game is unlike any other game produced for the Arc and even allows you to run other programs whilst you play it. Work your way through the different locations using your pointer to try out the many objects you will encounter and your magnifying glass to examine them.

CHOCKS AWAY

This 1 or 2 player flight simulator places you in command of a souped-up Tiger Moth bi-plane. There are 20 demanding missions with aircraft carriers, patrol boats, bombers, land guns, fighters and enumerous other opponents in solid 3D graphics. Also featured are various practice options and 3 huge maps. The ingenious split screen option allows 2 players to fight each other and you can record whole flights and play them back later. Supplied on 2 discs with full instruction manual.

SUPERPOOL

A 3 dimensional Pool simulation designed exclusively for A3000 and Archimedes computers. Superpool allows you to play tournaments, challenges, trickshots, replay your last shot and even create and edit your own tables. You will be to view the table from any angle or distance and move around it even while the balls are moving. There are options to play against computer players or a friend, make swerve shots, incredible masse shots, play 9 ball or 15 ball pool and all the rules are fully implemented.

NEVRYON

An arcade quality sideways scrolling shoot'em up featuring the best graphics, sound and music yet seen or heard on the Arc. 4 very different missions will tax your skills to the limit and there are 6 pieces of excellent stereo music to set the scene. Over 1.5 megs of 256 colour graphics are scrolled at 25 frames per second with up to 60 objects on screen and 6 levels of true parallax scrolling. There's an amazing array of weaponry to collect to cause maximum devastation. A superb game.

BREAK 147

A full 3D snooker implementation with superb solid graphics and brilliant digitised sound effects. Incredibly realistic interaction between the balls allows swerve, stun, backspin etc. You can view the table from any angle even as the balls are moving. All the rules of snooker are implemented and you can play matches, set up tricks shots or just practice. Play against friends or the computer and save whole frames to replay later.

THE REAL McCOY

A top quality 4 game compilation package featuring UIM, Arcade Soccer, White Magic and Quazer. Individually the games would cost £81.80 making The Real McCoy possibly the best value on the market.

DROP SHIP

Drop Ship features 15 levels of super smooth (50 frames per second) arcade action. Your ship, which is plotted to an accuracy of 0.0001 of a pixel, can collect credits for extra weaponry, anti-gravity controllers and much more. The gameplay is stunning and is packed with features to keep you hooked. Drop Ship is supplied on 2 discs with instruction manual.

SIMPLY FILL IN THIS COUPON AND SEND A CHEQUE OR POSTAL ORDER TO IMPACT SOFTWARE.

- All games despatched by 1st class post.
- FREE postage and packing (U.K.only).
- Overseas - add £2 per item.
- Despatch normally same day as order.
- Minimum orders £5.00.
- Telephone orders welcome.

TELEPHONE ORDERS WELCOME
24 HOUR SERVICE 7 DAYS A WEEK

VISA

IMPACT Software

(0742) 769950 or 700661
Impact Software
Neepsend House
1 Percy St
Sheffield S3 8AU

To: Impact Software, Neepsend House, 1 Percy St, Sheffield, S3 8AU. ***Please send me the following :-***

TITLE	FORMAT (Cassette etc.)	COMPUTER	PRICE

(We cannot accept orders for less than £5.00)

* I enclose a cheque/P.O. or :

* Debit my Access/Visa card account : Exp.......

TOTAL COST....... £

(BLOCK CAPITALS PLEASE)

Name..

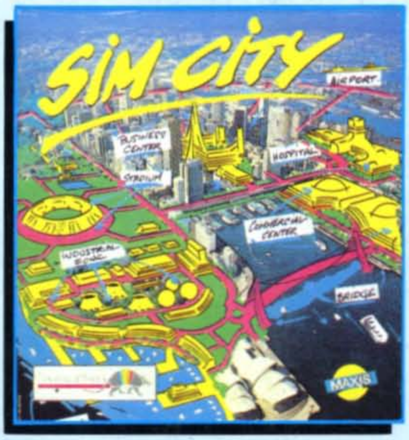
Address..

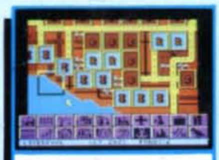
....

....

Postcode..

SUPERIOR SOFTWARE




Harbour Development

Regional Map

SIM CITY

The Unique Award-Winning City Simulation Game

With SIM CITY, take the destiny of the world's greatest cities in hand..Build houses, streets, factories, airports and power stations. You will have to fight crime and pollution, collect taxes and balance your budget.

Everything is managed and animated in real time. Every decision influences instantly the life of your town. You will face crises, natural disasters (tornadoes, earthquakes, etc.), but - who knows - maybe one day you will construct the perfect city.

SIM CITY is an all-absorbing and unique game. Other computer versions were voted the TOP GAME and TOP SIMULATION of the year in America (1989) and received a TILT D'OR award in France (1990).

BBC Micro/Master & Electron

HOSTAGES

Realistic Graphics & Gameplay...Superb Sound Effects & Tunes

An urgent phone call from the National Security Minister....an Embassy has been overrun by terrorists. As Head of the Terrorist Combat Squad you are in control of all operations.

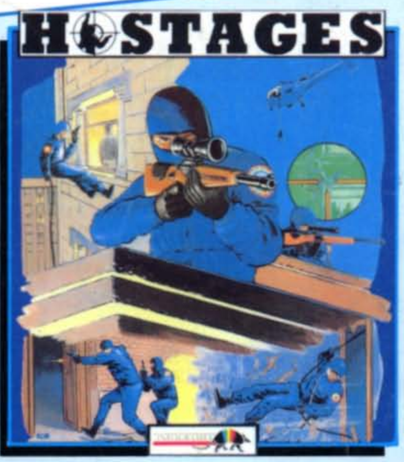
First, you must place your crack marksmen in nearby buildings, avoiding infrared lights and the terrorists' deadly aim. Then, after descending by rope, and protected by your marksmen, enter the Embassy through the windows and begin your search in silence. But beware, each door, each room, could be a death trap!

You must rescue the hostages, without any loss of life, and this will depend on the cohesion and co-ordination of your team.
NOW IT'S YOUR MOVE ! KEYBOARD OR JOYSTICK/MOUSE CONTROL.

BBC Micro/Master, Electron & A3000/Archimedes

BBC Micro/Master

A3000/Archimedes



PLAY IT AGAIN SAM 14
PREDATOR
BALLISTIX
STAR PORT
SUPERIOR SOCCER

Superior Soccer

Star Port

PLAY IT AGAIN SAM 14

A New Action-Packed Four-Game Compilation

PREDATOR

Nothing like it has ever been seen before! You've heard about the Schwarzenegger film PREDATOR...now you can play the leading role. Fight your way through the South American jungle, but, beware the mysterious alien...

"A fun game having a lot of the feel of a Schwarzenegger film"...Micro User

SUPERIOR SOCCER

A fast action arcade game, with realistic graphics, or a challenging football management game...or, for the ultimate in football excitement and realism, you can play a combination of both!

"Puts you in the role of football player/ manager, combining on-the-field action with strategic planning just like the real thing!"...BBC Acorn User

BALLISTIX

It's a whole new ball game! The fastest, wackiest, toughest computer game yet to appear. Play against a friend or the computer...60 different screens.

"Ballistix is original, fun and very addictive. Each new level is a challenge which brings a new court layout with several surprises"
...Electron User

STAR PORT

A brand-new arcade-adventure with 60 action-packed screens, written by the author of QUEST and CAMELOT. Rescue the medical supplies from the strange triangular space station...but only if you can solve the increasingly difficult letter-puzzles on each level.

BBC Micro/Master & Electron

SIM CITY
BBC Micro/Electron Cassette...£12.95 BBC Micro 5¼"Disc...£14.95
Master Compact 3½"Disc......£19.95

HOSTAGES
BBC Micro/Electron Cassette...£9.95 BBC Micro 5¼"Disc..............£11.95
Master Compact 3½"Disc....£14.95 A3000/Archimedes 3½"Disc...£19.95

PLAY IT AGAIN SAM 14
BBC Micro/Electron Cassette.....£9.95 BBC Micro 5¼"Disc...£11.95
Master Compact 3½"Disc......£14.95

BBC Micro Cassettes & BBC Micro 5¼" Discs are compatible with BBC B, B+ & Master 128 computers. Screen pictures show the BBC Micro versions of the games, unless otherwise stated.

We have in stock over 30 different titles for the BBC Micro/Master and Acorn Electron computers including such great games as: ELITE, REVS + REVS 4 TRACKS, EXILE, A QUESTION OF SPORT, REPTON INFINITY, RICOCHET, LAST NINJA 2 and PERPLEXITY, and the compilation titles: ACORNSOFT HITS 1 & 2, SUPERIOR COLLECTIONS 1, 2 & 3 and PLAY IT AGAIN SAMS 1 to 14. All are available for immediate despatch.

Our A3000/Archimedes titles include great classics such as ZARCH, CONQUEROR and REPTON 3 (now with enhanced graphics), and the new highly praised golf simulation/designer, SUPERIOR GOLF.

Please write to the address below or telephone for a full list of Superior Software games

SUPERIOR SOFTWARE ACORNSOFT

(Superior Software is a trading name of Superior Microcomputing Ltd.)
Dept. D3, P.O. Box 6, Brigg, S. Humberside DN20 9NH. Tel: (0652) 58585

PLEASE MAKE CHEQUES
PAYABLE TO "SUPERIOR SOFTWARE."

Access VISA

24 HOUR TELEPHONE
ANSWERING SERVICE FOR ORDERS

OUR GUARANTEE
- All mail orders are despatched by first-class post
- Postage and packing is free
- Cassettes and discs that are faulty on receipt will be replaced immediately

(This does not affect your statutory rights)